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Univ. of Missouri
Catalog. 1881-90

The cut on the opposite page presents a north front and west end view of the University edifice as it appears since enlarged and improved. The building is four stories high, with basement; is located in the south suburbs of Columbia, and faces north, presenting a front of 347 feet, the front of the old building being only 157. The new chapel or auditorium constitutes the east or left-hand wing, ground floor and gallery, with library hall above—in short, the portion of the building to the left of the eastern tower. Size of chapel, 75 feet front by 110 deep, and capable of seating about 1,500 persons. Seats are hinged opera house and amphitheater style. Between the chapel and the old building there is an entrance and stairway hall of 20 feet, running back the entire depth of the chapel. A similar hallway, under the western tower, also intervenes between the west end of the old building and the new west wing—this wing also presenting a front (including hallway) of 95 feet; depth about 115. A hallway of 23 feet width, running east and west, divides the west wing—the entire portion of it, north of this hall and fronting north, being the museum, the size of which is 75 by 47 feet. Size of wing south of east and west hall, which will be divided into recitation rooms, 75 by 45 feet. The whole building is lighted by electric light, and warmed by steam with the Heine boilers and the Bundy radiators.

THE LIBRARY OF THE
AUG 18 1936
UNIVERSITY OF ILLINOIS

ANNUAL CATALOGUE

OF THE

UNIVERSITY OF THE STATE OF MISSOURI

AT

COLUMBIA, MISSOURI,

1889-1890

THE LIBRARY OF THE
AUG 18 1936
UNIVERSITY OF ILLINOIS

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JEFFERSON CITY, MO.:

TRIBUNE PRINTING COMPANY, STATE PRINTERS AND BINDERS.

1890.

ANNOUNCEMENT FOR 1890-91.

The Academic, Agricultural, Medical, Normal and Engineering schools will open the 2d Tuesday (9th) of September, 1890. The Law school will open October 1.

The departments of instruction are :

1. The Academic schools of Language and Science.
2. The Professional schools of Agriculture, Pedagogics, Engineering, Art, Law and Medicine; and at Rolla the School of Mines and Metallurgy.

These Schools of the University are open to young men and to young women. Excepting in the Law, Medical and Engineering schools (each \$40.00) and the Commercial school, the entire expense for the year for tuition and contingent fees is \$20.00.

Board in private families, \$3.00 to \$4.50, and in the clubs at about two-thirds of these rates.

In the means of instruction and illustration, none of the institutions of learning in Missouri have superior advantages. The association of the several schools with each other is deemed a circumstance of decided advantage. When, for example, a student has entered the Law or Medical school, he has access to all the other departments of instruction without any additional expense.

Commencement day is the first Thursday of June.

Please send for catalogue to the *Librarian*, Missouri State University, Columbia, Missouri.

M. M. FISHER, Chairman of Faculty.

REPORT OF THE BOARD OF CURATORS.

To His Excellency, DAVID R. FRANCIS,
Governor of Missouri:

SIR: In compliance with the provisions of section 8751 of the Revised Statutes of Missouri, 1889, the Curators of the University of the state of Missouri have the honor to submit to your Excellency, the following report of the condition and wants of said institution for the scholastic year ending June, 1890.

The University is now closing the fiftieth year since its organization. During this long period it has met with many reverses and passed some dangerous crises, but now finds itself safely imbedded in both the statute and organic laws of the state. The Curators have reason to believe that the University is growing in the esteem and confidence of its Alumni and the citizens of Missouri in general. The Alumni expect to celebrate the semi-centennial of the organization of the University on the 4th of July, 1890.

On the succeeding pages will be found the separate reports of the various colleges and departments of the University, the course of study in each, together with the number and names of the professors, officers and students.

For more definite information the following summary is submitted:

Total number of students enrolled during the year at Columbia	428
“ number of professors employed for the year	18
“ number of assistants employed for the year	9
“ receipts for the year ending Dec. 31, 1889.....	\$82,261 81
“ disbursements for the year ending Dec. 31, 1889.....	82,032 79

At the annual meeting in June, 1889, Dr. S. S. Laws tendered his resignation as President of the University. This closed an administration of thirteen years, the longest in the history of the institution. Dr.

Laws was an eminently able and successful educator and president, and the University, during his administration, made very decided educational and material progress. The Curators were not prepared at once to fill the vacancy thus created, and Dr. M. M. Fisher, professor of Latin language and literature, was appointed Chairman of the Faculty, with the ordinary powers and duties of the President.

The school year now closing has been marked by earnest and careful work by the various professors and their assistants, as well as by diligent application and correct conduct on the part of the great body of students. The health of the students has been remarkably good. In the University boarding club, which accommodates ninety students, not a single serious case of sickness has occurred.

The University buildings are in good repair, excepting the roofs on the new wings of the main building. These roofs are gradually giving way, and demand constant attention to keep them in repair. At some time in the near future it will be necessary to make a considerable expenditure in replacing the old roofs with new ones.

The grounds of the University, while not so well or so handsomely improved as is proper for a State institution of this character, are in as good condition as the funds at the disposal of the Curators for that purpose will permit.

AGRICULTURAL COLLEGE AND EXPERIMENT STATION.

All of the Agricultural college grounds and buildings are now devoted to the work of the Experiment station, which has been organized in connection with the Agricultural college, under the provisions of the act of Congress of March 2, 1887. The work of experimentation is being conducted by competent and experienced men, and the results are given to the public from time to time by published bulletins. Since the last report, Dr. Edward D. Porter, late of the University of Minnesota, has been appointed Dean of the Agricultural college and Director of the Experiment station.

The buildings of the Experiment station proper are in good condition, but the farm buildings and grounds of the Agricultural college are not in good condition. The greater part of the fencing is old and dilapidated. As has been heretofore reported, the new college barn, with all its contents, was on May 3, 1889, totally destroyed by fire. The insurance on the building, amounting to \$4,000, has been collected and applied to the erection of smaller structures and improvements, which serve a temporary purpose, but which are wholly inadequate to the successful prosecution of farm and experimental work. The green house of the horticultural department, a frail structure at best, was on

January 12, 1890, struck by a wind-storm or cyclone and practically destroyed. A new house, built upon a scientific plan, with the latest improvements, is indispensable to the success of this department.

AGRICULTURAL COLLEGE LANDS.

The State of Missouri became one of the beneficiaries under the act of Congress of July 2, 1862, donating large bodies of the public lands to such states and territories as might provide colleges for the benefit of agriculture and the mechanic arts. By its act of acceptance of March 17, 1863, the State secured from the Federal government about 300,000 acres of land. The greater part of these lands have been sold and from the proceeds thereof the sum of \$312,000 is invested in State certificates of indebtedness bearing interest at the rate of five per cent per annum, payable semi-annually. About 60,000 acres of land remain unsold. From the date of the selection of these lands up to the present time, the Curators have necessarily incurred large expenses in their management, protection, sale and superintendence. The amount of these expenses is a little more than \$20,000, of which the State of Missouri has never paid one dollar. For want of other means the Curators have been compelled to pay these expenses out of the fund arising from the sale of lands, thus materially diminishing the fund.

The act of Congress provides, "That all the expenses of management, superintendence and taxes from date of selection of said lands, previous to their sale, and all expenses incurred in the management and disbursement of the moneys which may be received therefrom, shall be paid by the States to which they may belong out of the treasury of said States, so that the entire proceeds of the sale of said lands shall be applied without any diminution whatever to the purposes hereinafter mentioned." (The purposes mentioned are the endowment, support and maintenance of colleges of agriculture and the mechanic arts). The General Assembly of the State of Missouri, by its act of acceptance, resolved, "That the said act of the Congress of the United States is assented to and accepted by the State of Missouri, with all the conditions, restrictions and limitations therein contained; and the faith of the State of Missouri is hereby pledged to the faithful performance of the trust thereby created."

Further statements are unnecessary to show that it is the duty of the State to make a sufficient appropriation to reimburse the college Lands fund for the amounts so expended.

COLLEGE OF MECHANIC ARTS.

One of the conditions of the Congressional land grant of July 2, 1862, is that the State shall endow, support and maintain a college of the mechanic arts (as well as a college of agriculture), "in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life." The grant was accepted with all the conditions, restrictions and limitations therein contained; and the faith of the State of Missouri was pledged to the faithful performance of the trust thereby created. It is unnecessary to say that the State has not made good this pledge so far as it relates to a college of the mechanic arts.

One of the great demands of the present day is the practical education and training of the industrial classes in the line of their ordinary pursuits and vocations. The Curators hope that they may soon see this demand met, and the trust, voluntarily assumed by the State, performed by the establishment, equipment and maintenance of a college of the mechanic arts in connection with the Agricultural college.

LAW DEPARTMENT.

Judge Philemon Bliss, for seventeen years Dean of the Law department, died in August, 1889. Judge Bliss had performed the duties of that position with signal success and ability since the founding of the Law school in 1872. To fill the vacancy thus made, the Curators appointed the able and distinguished jurist, Judge Alexander Martin of St. Louis. The Law department is now in a flourishing condition, and with proper financial support gives promise of future growth and prosperity.

MEDICAL DEPARTMENT.

For several years past this University has been working under a contract of co-operation with the Missouri Medical college at St. Louis. It was at first thought that this contract of co-operation would be for the mutual benefit of the two institutions. But for good and sufficient reasons, the Curators have resolved to terminate the contract, and have given the required notice to the authorities of the Missouri Medical college. There will be no connection between the two institutions after October 5, 1890. A reorganization of the Medical department of the University will be required, with a longer course of instruction, a larger teaching force, and increased expenditures.

CHEMICAL LABORATORY.

One of the most important needs of the University is a separate building for a chemical laboratory, now so intimately associated with the Agricultural department. This want arises not only from the inadequacy of the present accommodations to meet the increasing demands made upon this department, but also from the danger to the health of the students, occupying the same building, arising from the noxious gases generated in the laboratory. This is a convenience provided in nearly every institution in the country where practical and analytical chemistry is made a part of the course of study.

MILITARY DEPARTMENT.

This department had its origin in the Congressional Land Grant act of July 2, 1862. By an act of the last General Assembly the Military department of the State University was created the Missouri State Military school. It is expected that each Senator and Representative in the General Assembly will, during the month of August, 1890, appoint one cadet for the next scholastic year. The increased importance and usefulness of this department call for increased legislative appropriations for its support and maintenance.

It is desirable that the law relating to this department should be amended in the following particulars: 1—Cadets to be appointed for two years instead of one. 2—Appointments to be made upon competitive examination. 3—The Governor to appoint a specified number of cadets without examination. 4—The State to furnish each cadet with two complete uniforms for each session.

ENDOWMENT.

The primary object of University education is to prepare our youth for service in the commonwealth. With this end in view, the plans and methods devised for the upbuilding of the State University should not only be in harmony with our Western thought and Western social and political life, but should also be such as will keep the institution fully abreast with the State's material progress. The best results will thus be reached in the training of the youth of the State, by the State for the benefit of the State. The best plan yet suggested for attaining these results is that of providing the University with a liberal and permanent endowment. Such an endowment would place the institution upon a firmer basis politically and financially. The friends of higher education would be saved the humiliation of appearing biennially before the Legislature as supplicants for that support and maintenance

the giving of which the Constitution imposes upon the Legislature as an imperative duty. The Board of Curators, instead of being hampered by a present lack of funds and the uncertainty of future supplies, would give to the work of building up a great University a much more effective energy and enthusiasm than they can give under the present system. There is no reason why such an endowment should not be given. Missouri is to-day the greatest in wealth, the greatest in population, the greatest in natural resources, of all the fifteen States and Territories composing the original Louisiana purchase. If she would continue to be the greatest, she must do her whole duty in providing for her sons and daughters that higher educational training which will fit them for the most useful and intelligent service in the commonwealth. The Curators feel assured that your Excellency is in hearty sympathy with them in their movement for an endowment of the University, and hope that it may become an accomplished fact before the close of your administration.

Respectfully submitted.

JOHN HINTON,
President of Board of Curators.

CORPORATION.

THE CURATORS OF THE UNIVERSITY OF THE STATE OF MISSOURI.

HON. G. F. ROTHWELL.....	Moberly	} Term expires Jan. 1, 1891.
HON. C. C. BURNES.....	St. Joseph..	
GOV. E. O. STANARD.....	St. Louis....	

JUDGE JOHN HINTON	Columbia...	} Term expires Jan. 1, 1893.
GEN. E. Y. MITCHELL.....	Rolla	
HON. R. B. OLIVER.....	Jackson....	

HON. B. M. DILLEY	Hamilton...	} Term expires Jan. 1, 1895.
JUDGE G. B. MACFARLANE.....	Mexico	
HON. GARLINER LATHROP.....	Kansas City.	

OFFICERS OF THE BOARD.

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HON. B. M. DILLEY.....	Vice-President.
J. G. BABB,	ROBERT B. PRICE,
Secretary.	Treasurer.

THE SCHOOL OF MINES.

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JOSEPH E. CAMPBELL, Esq.....	Rolla.
JOHN W. LIVESAY, Esq.....	Rolla.
T. M. JONES,	D. W. MALCOLM,
Secretary.	Treasurer (office at Rolla.)

BOARD OF VISITORS.

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HON. NORMAN J. COLMAN.....	St. Louis.
HON. JOHN F. WILLIAMS.....	Macon.
HON. F. F. ROZZELLE.....	Kansas City.

THE UNIVERSITY FACULTY.

(Excepting that of the Chairman of the Faculty, the names are printed in their chronological order of appointment)

M. M. FISHER, D. D., LL. D.,
Chairman of Faculty, and Professor of Latin Language and Literature.

JOSEPH G. NORWOOD, PH. D.,
Emeritus Professor of Physics.

PAUL SCHWEITZER, PH. D.,
Professor of Chemistry.

ANDREW W. MCALESTER, A. M., M. D.,
Professor of Surgery and Diseases of Women and Children.

WM. A. CAUTHORN, A. M.,
Assistant Professor of Mathematics.

JUDGE HENRY S. KELLEY, LL. D.,
Lecturer on Criminal Jurisprudence.

JUDGE SEYMOUR D. THOMPSON, LL. D.,
Lecturer on the Law of Corporations.

THOMAS JEFFERSON LOWRY, S. M., C. E.,
Professor of Civil Engineering and Dean of Engineering Faculty.

WOODSON MOSS, M. D.,
Professor of Anatomy and Physiology and Secretary Medical Faculty.

A. F. FLEET, A. M., LL. D.,
Professor of Greek and Comparative Philology.

JAMES SHANNON BLACKWELL, A. M., PH. D.,
Professor of Hebrew and Semitic Literature and Modern Languages.

Professor of Art.

CHRISTOPHER G. TIEDEMAN, A. M., LL. B.,
Resident Professor of Law.

J. C. JONES, A. M.,

Associate Professor of Latin and Comparative Philology and Secretary of Faculty.

W. C. TINDALL, M. S.,

Assistant Professor of Mathematics.

E. A. DRAKE, M. A., (M. S.)*

Instructor in Academic Department.

PAUL PAQUIN, M. D., V. M.,

Professor of Comparative Medicine and Veterinary Science, and Director of University Pathological Laboratory.

EDWARD A. ALLEN, LITT. D.,

Professor of English and Dean of Normal Faculty.

WM. B. SMITH, PH. D., (Göett.)

Professor of Mathematics.

CLARENCE L. SPEYERS, PH. B.,

Assistant in Chemistry.

W. W. CLENDENIN, S. M.,

Assistant Professor of Geology and Mineralogy.

H. C. PENN, A. B.,

Assistant Professor of English.

GEORGE D. PURINTON, A. M., PH. D.,

Professor of Biology and Director and Curator of the Museum.

G. C. BROADHEAD, M. S.,

Professor of Geology and Mineralogy.

JAMES A. YANTIS, LL. B.,

Resident Professor of Law.

BENJAMIN F. HOFFMAN, L. M.,

Assistant Professor of Modern Languages.

MRS. JOHN P. ROYALL,

Principal of Ladies' Department.

W. H. ECHOLS, B. Sc., C. E., (M. S.)*,

Director and Chairman of the Faculty.

E. A. DRAKE, A. M., (M. S.)*,

Instructor in English.

P. J. WILKINS, B. S., (M. S.)*,

Instructor in Preparatory Department.

* Mining School.

JOHN P. ROYALL,
Professor of Book-keeping.

J. W. CLARK, B. S.,
Professor of Horticulture and Superintendent of Horticultural Grounds.

M. L. LIPSCOMB, A. M.,
Professor of Physics.

W. H. SEAMON, B. S. A., (M. S.*),
Professor of Analytical Chemistry and Metallurgy.

W. B. RICHARDS, M. A., (M. S.*),
Professor of Mathematics.

LIEUTENANT B. B. BUCK,
(Detailed from the Regular Army.)
Professor of Military Science and Tactics.

EDWARD D. PORTER, PH. D.,
Professor of Agriculture and Dean of the Agricultural College.

HIRAM PHILLIPS, TOP'L ENGINEER,
Assistant Professor of Engineering.

A. L. McRAE, PH. D.,
Assistant Professor Physics.

SILAS DINSMOOR,
Assistant in Chemistry.

W. R. DODSON,
Assistant in Biology.

ALEXANDER MARTIN, A. M., LL. B.,
Professor of Law and Dean of the Law Faculty.

GEORGE R. DEAN, C. E., (M. S.*),
Instructor in Mathematics and Physics.

J. W. MONSER,
Librarian.

J. G. BAEB,
Proctor.

*Mining School.

STUDENTS

UNDER-GRADUATES.

ACADEMIC STUDENTS.

SENIOR CLASS.

Name.	Residence.
Catron, Wm. Van Allen.....	Lafayette county.....
Coleman, Nannie Stern.....	Boone ".....
Conley, Sanford Francis.....	Boone ".....
Coons, James Henry.....	Marion ".....
Dodson Wm. Rufus.....	Boone ".....
Haley, John Lockhart.....	Boone ".....
Hancock, Etta.....	Chariton ".....
Hancock, Martha Gay.....	Chariton ".....
Harrison, Carter Bassett.....	Tennessee.....
Hatton, Stewart Price.....	Clark county.....
Henricks, Solomon.....	Caldwell ".....
Hibbard, Cleon Melville.....	Lewis ".....
Swift, Chas. Albert.....	Audrain ".....
Tipton, Joseph Clark.....	New Mexico.....
Watson, Edwin Moss.....	Boone county.....
Williams, Chas. Page.....	Jackson ".....

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JUNIOR CLASS.

Name.	Residence.
Bradley, Benj. Edgar.....	Johnson county.....
Britt, Leila.....	Cass ".....
Brownlee, Richard S.....	Linn ".....
Dent, Lewis Lee.....	Dent ".....
Divelbiss, Frank Pierce.....	Ray ".....
Dorman, John Benj.....	Henry ".....
Grace, Wm. Odon.....	Livingston ".....
Gray, Louis.....	Moniteau ".....
Hatton, John Harvey.....	Boone ".....
Hubbell, John Morton.....	Boone ".....
Hatton, Moses Wesley.....	Boone ".....
Jennings, Wm. Sampson.....	Lawrence ".....
McLeary, Henry Sanford.....	Cape Girardeau county..
Merrill, Wm. Tell.....	Macon ".....
Monser, Harold Edwin.....	Boone ".....
Pratt, George Cooley.....	Boone ".....

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SOPHOMORE CLASS.

Name.	Residence.
Adams, Newton J.....	Monroe county.....
Allen, Thos. Buford.....	Madison
Beach, Emerson Vivian.....	Montana
Bronson, Hart Howard.....	Pettis county.....
Bryan, Richard Franklin.....	Vernon
Burns, Thos. Edward.....	Ralls
Conley, Milton Robards.....	Boone
Cook, Wm. Arthur.....	Monroe
Denny, James Milton.....	Howard
Fellows, John Nelson.....	Platte
Fleet, Mary Seddon.....	Boone
Gentry, Wm. Richard.....	Boone
Goodrich, James Edward.....	Clinton
Groves, Hiram.....	Lafayette
Hancock, Alice Virginia.....	Chariton
Hatton, Robert Edwin.....	Boone
Jurey, Louis Conner.....	Cooper
La Motte, John Harry.....	Howard
Mansfield, May.....	St. Louis
Martin, Leonidas Warren.....	Marion
Maupin, Maggie Chapman.....	Boone
McAfee, Mary.....	Boone
McWilliams, Homer.....	Jackson
Mitchell, Homer Rawlins.....	Boone
Moore, Harris Lancaster.....	Colorado
Mountjoy, Joseph Shannon.....	Boone county.....
Peeior, Edwin Claude.....	Henry
Records, Wm. Pleasant.....	Jackson
Selsor, Mark.....	Daviess
Sterrett, Wm. Stokes.....	Monroe
Storm, John Chas.....	Schuyler
Thompson, Burton Maude.....	Boone
Todd, Iva Jane.....	Boone
Westlake, Nancy Pearl.....	Boone
Westlake, Ruby Moss.....	Boone
Whitsett, Geo. Pentzer.....	Jasper

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FRESHMAN CLASS.

Name.	Residence.
Adams, Vinnie.....	Monroe county.....
Adams, Jennie.....	Monroe
Allen, Edward Thorpe.....	Boone
Anthony, Richard Francis.....	Nodaway
Asendorf, Geo. William.....	Holt
Banks, John Samuel.....	Boone
Banks, Anna.....	Boone
Barnett, Beulah Hartwell.....	Boone
Bayne, Charles Herbert.....	Jackson
Bishop, John Edmond.....	Moniteau
Brashears, Lavinia.....	Ralls
Bryson, Geo. Washington.....	Johnson
Caldwell, Robert.....	DeKalb
Chapman, Harry.....	St. Louis
Crumbaugh, Lucie Cornelia.....	Boone
Debord, King.....	Andrew
Delmore, Thos. Edward.....	Boone
Donnohue, Mary Lucile.....	Boone
Draffen, Whitlow Vest.....	Cooper
Dunn, John Wm.....	Bollinger

FRESHMAN CLASS—Continued.

Name.	Residence.
Duncan, Jesse	Lincoln county
Estes, James Wm.	Boone "
Evans, Thos. Emanuel.	Montana
Evans, Edwin Elgin	Linn county
Fannin, Frederick Henry	Arkansas
Fisher, Jennie Milton	Schuyler county
Frey, Geo. Gaston	Jackson "
Fulks, Elbridge Byron	Moniteau "
Gamble, Hamilton	Cole "
Gerig, Ida	Boone "
Gerling, Henry Joseph	Boone "
Gladney, Andrew Gaston	Lincoln "
Gordon, Bessie Maupin	Boone "
Gordon, Marshall	Boone "
Hack, Mamie	Boone "
Haines, Chas. Gregg	Boone "
Hanszen, Lydia	Cole "
Harris, Herman Fermain	Boone "
Haydon, Curtis	Boone "
Holmes, Albert Sidney	Marion "
Howell, Chas. Morgan	Atchison "
Kiehl, Herman Gottlieb	Franklin "
Lail, Andrew Barnett	Montgomery "
Lockwood, Wm. Duncan	Atchison "
Mayfield, Leander Claudius	Laclede "
Potts, Chas. Decatur	Boone "
Pratt, Chas. William	Boone "
Ray, Fred Percivall	Jackson "
Rostock, Benj. Franklin	Holt "
Royce, Ira	Bates "
Sams, Wm. Meade	Jackson "
Scrutchfield, Guthrie Eugene	Macon "
Taylor, Thos. Jackson	Lincoln "
Todd, Elhanon Hiram	Boone "
Treadway, Oliver Herbert	Pike "
Truitt, Clarence	Boone "
Wade, John Franklin	Andrew "
Walker, Harry Bruce	Nodaway "
Weltner, Frank Benj	Montgomery "
White, James Daniel	Boone "
Williams, Henry Clay	Andrew "
Vivion, Wm. Ambrose	Callaway "
Zey, Edward Gustave	Henry "

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PREPARATORY CLASS.

Name.	Residence.
Alford, Lucas	Ralls county
Anderson, Mark McCausland	Boone "
Barbour, Lizzie Messick	Texas
Barnes, Robert Lee	Boone county
Barnett, Mary Jessie	Boone "
Batterton, John Young	Boone "
Belden, Mary Margaret	Boone "
Billups, Wm. Edward	Iowa
Bishop, Wm. Vance	Nodaway "
Blake, Wm. Spotswood	St. Louis "

PREPARATORY CLASS—Continued.

Name.	Residence.
Bouldin, Edward Sandy.....	Pettis county.....
Boyd, James Perry.....	Ralls ".....
Bradford, Frank Cecil.....	Boone ".....
Bradford, Alex.....	Boone ".....
Bretz, Wm. Shull.....	Platte ".....
Buck, Garland.....	Texas.....
Campbell, Harriet.....	Boone county.....
Campion, Rufus.....	Boone ".....
Cauthorn, Edward Buford.....	Boone ".....
Chambers, Albert Sidney.....	Clay ".....
Davidson, Everett Jerome.....	Miller ".....
Davis, Wm. Moffett.....	Linn ".....
Dillard, Lindsay.....	Ray ".....
Dodson, Allen Edward.....	Arkansas.....
Douglass, William.....	Boone county.....
Dunn, John Jay.....	Daviess ".....
Edwards, Anna Lillian.....	Boone ".....
Elkin, Asa Bloomfield.....	Boone ".....
Estes, John Samuel.....	Boone ".....
Estes, Wm. Franklin.....	Boone ".....
Faris, John Calvin.....	Howard ".....
Felker, Henry Clay.....	Maries ".....
Feuerbach, Oliver Proctor.....	St. Louis.....
Ficklin, Walter Homan.....	Boone county.....
Fisher, Andrew James.....	Polk ".....
Garrett, Joseph P.....	Holt ".....
Garth, Jefferson.....	Boone ".....
Gerig, Edward.....	Boone ".....
Goslin, Benjamin Franklin.....	Boone ".....
Graham, Benjamin Richard.....	Boone ".....
Guenther, Gustave Adolph.....	Montgomery county.....
Guitar, Odon.....	Morgan ".....
Hancock, Mary Thomas.....	Boone ".....
Hartley, Robert Lee.....	Chariton ".....
Hatton, Lula Maude.....	Cedar ".....
Hatton, Anna.....	Boone ".....
Haydon, Hollis.....	Boone ".....
Heaston, George Washington.....	Boone ".....
Hellyer, Walter Theron.....	Harrison ".....
Hickman, Thaddeus Bryan.....	Crawford ".....
Hickman, Thomas Harvey.....	Boone ".....
Hill, Frank William.....	Boone ".....
Jackson, Clarissa.....	Chariton ".....
Jacob, Willard Woodson.....	Boone ".....
Kendrick, Granville Hodgins.....	Boone ".....
Kiehl, Gottlieb Herman.....	Lewis ".....
Knox, John Upton.....	Franklin ".....
Kreeger, Charles Lucian.....	Montgomery ".....
Kurtz, Russell Lenoir.....	Jackson ".....
Loeb, Clarence.....	Boone ".....
Lyon, Jessie.....	Boone ".....
Mahan, Maria Lou.....	Boone ".....
Mahan, Alameda.....	Boone ".....
Manring, John Franklin.....	Boone ".....
Marr, James Anderson.....	Gentry ".....
Marshall, Wm. Nicholas.....	Clay ".....
Marshall, Chauncey Applegate.....	Putnam ".....
Martin, Lucretia Winifred.....	Putnam ".....
May, Henry Allen.....	Boone ".....
McCulloch, Albert Johnston.....	Franklin ".....
McKimpson, Wm. Edward.....	Cooper ".....
Morgan, John Wm.....	Boone ".....
Murray, Jerre Herbert.....	Virginia.....
	Callaway county.....

PREPARATORY CLASS—Continued.

Name.	Residence.
Park, Allen.....	Boone county.....
Parmer, John Elvin.....	Boone ".....
Peeler, Wm. Boonie.....	Howard ".....
Purcell, Reuben David.....	Chariton ".....
Quinn, Abram Turner.....	Boone ".....
Ray, Lolo.....	Dent ".....
Rees, Minnie.....	Boone ".....
Ridgway, Robert Foster.....	St. Clair ".....
†Robards, Chas. Scott.....	Arkansas.....
Rogers, Robert Estill.....	Boone county.....
Scearce, Robert Emmet.....	Clinton ".....
Schmidt, Lucy.....	Boone ".....
Schooley, Floyd Emmet.....	Lafayette county.....
Schweitzer, Elizabeth.....	Boone ".....
Shelley, Frank Richard.....	Mercer ".....
Smith, Zimri Carter.....	Reynolds ".....
Smith, James Lot.....	Boone ".....
Smith, George.....	Linn ".....
Stone, Kimbrough.....	Vernon ".....
Thomas, Ralph Vernon.....	Buchanan ".....
Thomas, Jesse Leon.....	Jackson ".....
Thompson, Benjamin.....	Warren ".....
Thompson, Thos. Waddy.....	Warren ".....
Todd, Benjamin Edward.....	Boone ".....
Venable, Monroe.....	Boone ".....
Wade, James Monroe.....	Boone ".....
Wade, Wm. Clement.....	Andrew ".....
Wakefield, Chas. Lester.....	Audrain ".....
Williams, Nathan Rice.....	Boone ".....
Yeager, Josie.....	Pike ".....
Yowell, Benj. Jasper.....	Boone ".....
(104).	

SPECIAL STUDENTS.

Name.	Residence.
Bostick, Isalene C.....	California.....
Doss, Thomas.....	Boone county.....
Eiring, Wm. Henry.....	Howard ".....
Godfrey, Horace Little.....	Montgomery ".....
Johnson, Wright Smith.....	St. Charles ".....
Long, Laura Virginia.....	St. Louis ".....
Sparks, Theodore Clifton.....	Clay ".....
Tate, James B.....	Boone ".....
Theilman, Emil.....	Caldwell ".....
Todd, Carolyn.....	Boone ".....
(10).	

† Deceased.

PROFESSIONAL STUDENTS.

AGRICULTURAL STUDENTS.

Name.	Residence.
Davis, Forrest Everett.....	Vernon county
Devin, Charles Ernest.....	Shelby "
Lang, Edmund David.....	Cape Girardeau county..
McGlothlin, Henry Allen.....	Boone "
Mikel, Henry Franklin.....	Boone "
Schieli, Charles.....	Illinois "
Smith, Stanley.....	Boone "
Tandy, John Lewis.....	Boone "
Van Trump, Samuel Hefley.....	Ray "
(9).	

NORMAL STUDENTS.

Name.	Residence.
Ballew, Amelia Jane.....	Boone county
Banks, William W.....	Saline "
Belden, William Everett.....	Boone "
Broadhead, Rosalie.....	St. Louis "
Burk, Bessie Belle.....	Randolph "
Burkhart, Lewis Henry.....	Carroll "
Campbell, William Thaddeus.....	Jackson "
Clark, Mack Johnson.....	Lawrence "
Cobb, Spencer.....	Randolph "
Conger, Bessie Melcora.....	Boone "
Conger, Harriett Newel.....	Boone "
Crow, Isaac Franklin.....	Bates "
Dennis, Alonzo Lee.....	Boone "
Dennis, Bettie.....	Boone "
Dillon, John William Sherman.....	Worth "
Donglass, Lena Elizabeth.....	Boone "
Doyle, John Harrison.....	Carroll "
Droste, Elizabeth Anna.....	Cole "
Eckert, Mary Theresa.....	Pennsylvania
Evans, Amanda.....	Clay county
Floyd, Monroe Albert.....	Saline "
Grace, Charles Henry.....	Liv'gston "
Granger, Irvin Wilbur.....	St. Louis "
Haigler, Harry Lee.....	Holt "
Harlan, Anna.....	Andrew "
Harris, Susan Duncan.....	Callaway "
Hatton, Claudia May.....	Boone "
Holloway, Dollie Barrett.....	Boone "
Holman, George Isaac.....	Macon "
Hulse, Benjamin Ely.....	Ralls "
Maurer, Annie Barbara.....	Boone "
Maurer, Lucy Catherine.....	Boone "
McGee, Lillian.....	Boone "
McMunn, Grace.....	Scotland "
Oliver, Lizzie.....	Boone "
Pierce, Mary.....	Boone "

NORMAL STUDENTS—Continued.

Name.	Residence.
Rowell, Frank David.....	Clay county.....
Sinclair, Maggie.....	Boone “.....
Smith, Rosa.....	Boone “.....
Stephens, Mary Lenna.....	Boone “.....
Tebbs, Mary Paxton.....	Platte “.....
Tebbs, Laura Gilbert.....	Platte “.....
Tucker, Oren Timothy.....	Cooper “.....
Turner, Frank Marion.....	Linn “.....
Turner, Charles William.....	Carroll “.....
Witherspoon, Robert Levi.....	Henry “.....
Wood, John Hepler.....	Monroe “.....
Wren, William Franklin.....	Clinton “.....
Yager, George Washington.....	Boone “.....
Zaring, Emily Lee.....	Boone “.....

(50).

LAW STUDENTS.

Name.	Residence.
Allen, Charles Keyes.....	Boone county.....
Arnold, James Dudley.....	Boone “.....
Babb, William Joseph.....	Carroll “.....
Banta, William Sherman.....	Henry “.....
Belden, Eugene H.....	Boone “.....
Biggs, George Richard.....	Pike “.....
Botts, William Warren.....	Audrain “.....
Brown, John Smith.....	Knox “.....
Bruce, George Washington.....	Cass “.....
Burk, James Seymour.....	Randolph “.....
Cameron, John Freeman.....	Carroll “.....
Chapman, Campbell.....	Jackson “.....
Coleman, William Powell.....	Boone “.....
Corder, Leslie Walker.....	Lafayette “.....
Crews, Paul N.....	Howard “.....
Daniel, John Albert.....	Saline “.....
Denny, James Humphrey.....	Howard “.....
Duncan, James Buchanan.....	Nodaway “.....
Edwards, Waller.....	St. Charles “.....
Edwards, George Lockette.....	Cole “.....
Evans, Lindell Peter.....	Boone “.....
Fisher, Samuel Blair.....	Boone “.....
Galloway, Samuel Lewis.....	Howell “.....
Grempp, Christian Columbus.....	Maries “.....
Gunter, Walker T.....	Arkansas.....
Gwinn, James.....	Saline county.....
Hale, Wm. Benjamin.....	Boone “.....
Hall, Caswell Bradford.....	Cedar “.....
Hart, Chas. Cleand.....	Buchanan “.....
Hinton, Edward.....	Boone “.....
Hockaday, Rollins Mills.....	Boone “.....
Howard, Samuel Anderson.....	Ralls “.....
Howe, Alphonso.....	McDon'd “.....
Jennings, Wm. Sampson.....	Lawr'ce “.....
Jones, David Wm.....	Cooper “.....
Kane, Dennis Wm.....	Carroll “.....
Keith, Chas. Alexander.....	Lafayette “.....
Kemp, Geo. Ward.....	Pennsylvania.....
Littell, Wm. Robinson.....	Atchison ' county.....
Littick, Chas. Oscar.....	McDonald “.....

LAW STUDENTS—Continued.

Name.	Residence.
Littlefield, Edwin Clarence.....	Pettis county.....
Manns, Arnold.....	Pike ".....
Martin, Wm. Alexander.....	Mississippi.....
Martin, Thos. Allen Jones.....	Jackson county.....
McCulloch, Robt. Lee.....	Cooper ".....
McLane, Ora Johnson.....	C. Girardeau ".....
Moore, Joseph Lee.....	Scott ".....
Morrison, Albert Geo.....	Boone ".....
Munns, Horace.....	Washington.....
Nakajima, Yusukuni.....	Japan.....
Nicholas, James Lincoln.....	Howell county.....
O'Mahoney, Clarence.....	Boone ".....
Parker, Ashby Warren.....	Audrain ".....
Pittman, Hubert Ney.....	Arkansas.....
Pollan, John Randolph.....	Arkansas.....
Puckett, Oscar.....	Lafayette county.....
See, Geo. Washington.....	Montgomery ".....
Shull, Aytchmonde Perrin.....	Buchanan ".....
†Smith, Chas. Wm.....	Boone ".....
Sprecher, Wm. Henry.....	Kansas.....
Sterling, James Bowman.....	Mississippi.....
Terrell, Henry.....	Randolph county.....
Tomlin, Morell.....	Pettis ".....
Trumbo, Chas. Edgar.....	Linn ".....
Turner, Archie Wm.....	Boone ".....
Wade, Andrew Fuller.....	Boone ".....
Wallace, David.....	Ralls ".....
Warden, Hubert Pascal.....	Virginia.....
White, Edward Joseph.....	Arkansas.....

(69)

†Deceased.

MEDICAL STUDENTS.

Name.	Residence.
Banks, Wm. Marvin.....	Boone county.....
Carney, Ira.....	Henry ".....
Cartwright, Clarence Prentice.....	Pettis ".....
Evans, Robt. Lee.....	Boone ".....
Fluesmieir, Elihu Ashby.....	St. Cha's ".....
Forbis, Calvin Franklin.....	Gentry ".....
Gaines, Joseph Richard.....	Monroe ".....
Hamilton, James Thompson.....	Gentry ".....
Hampton, Zebulon Monroe.....	Boone ".....
Hatton, Ossian Forrest.....	Boone ".....
Hurt, Wm Bruton.....	Boone ".....
Jordan, Joseph Oliver.....	Howard ".....
Kinder, Edward Brown.....	C G'deau ".....
Mangus, Chas Walker.....	Randolph ".....
Nichols, Rob't Lee.....	Boone ".....
White, Wm. Garland.....	Boone ".....
Wright, Joseph Hascue.....	Vernon ".....

(17)

ENGINEERING STUDENTS.

SENIORS.

Name.	Residence.
Faris, Rob't Lee.....	Pemiscot county.....
Swift, Chas. Albert.....	Audrain ".....
Wilkerson, Thos. Jefferson.....	Clay ".....
Williams, Chas. Page.....	Jackson ".....
Williams, Frank Blair.....	Johnson ".....

(5)

JUNIORS, SOPHOMORES, FRESHMEN.

Name.	Residence.
Axtell, Oliver Neal.....	Jackson county.....
Bonfils, Chas Alden.....	Wyoming Ter.....
Broadhead, Garland Carr.....	Boone county.....
Carter, William Farley.....	Henry ".....
Cauthorn, Wm. Broadus.....	Boone ".....
Conley, Wm. Thompson.....	Boone ".....
Crecelius, Sam'l Farder.....	St. Louis.....
Dorsett, Palemon Howard.....	Boone county.....
Ellis, Abram Pinckney.....	Audrain ".....
Fyfer, John Kirkbride.....	Boone ".....
Gordon, Wm. Edward.....	Nodaway ".....
Grady, Walter Kay.....	Saline ".....
Haley, John Lockhart.....	Boone ".....
Hall, Wm. Franklin.....	Henry ".....
Heitzeberg, Henry.....	St. Louis.....
Hill, Curtis.....	Jackson county.....
Johnson, Edward Reade.....	St. Louis.....
Keller, James Thos.....	Illinois.....
Kerr, Luther Yager.....	Jackson county.....
Lockwood, Marquis Hartwell.....	Atchison ".....
Manring, Isaac Jefferson.....	Gentry ".....
McKean, Lewis Burton.....	Henry ".....
Morey, Richard.....	Pettis ".....
Nifong, Walter.....	Madison ".....
Osborn, Oliver Stelle.....	Clinton ".....
Ray, Oliver Frank.....	Jackson ".....
Schnecko, Robert.....	St. Louis.....
Shaw, Edward Lafayette.....	Pike county.....
Skelley, James Wm.....	Audrain ".....
Uphaus, John Wm.....	Laf'ette ".....
Vortriede, Max Chas.....	St. Louis.....
Webster, Edward Newell.....	St. Louis.....
Woodward, Wm. Darby.....	Audrain county.....

(33)

COMMERCIAL STUDENTS.

Name.	Residence.
Adams, Minnie May.....	Boone county.....
Beasley, Thomas L.....	Boone “.....
Erwin, John W.....	Jasper “.....
Shoup, Clyde Wayland....	Audrain “.....
(4)	

In addition to these special students, eighty-nine (89) academic and normal students were instructed in this department.

SUMMARY.

<i>Academic Students—</i>	
Seniors.....	16
Juniors.....	16
Sophomores.....	36
Freshmen.....	63
Preparatory.....	104
Special.....	10
Total.....	245
<i>Professional Students—</i>	
Agricultural.....	9
Normal.....	50
Law.....	69
Medical.....	17
Engineering.....	38
Commercial.....	4
Total.....	187
Grand total.....	432
Names counted twice.....	4
Number of individual students.....	428

STUDENTS OF SCHOOL OF MINES AND METALLURGY.

Name.	Residence.
Alexander, Thompson.....	Fort Smith, Ark.....
Billings, G. F.....	Fort Scott, Kas.....
Bland, Richard.....	Phelps county.....
Bland, Thomas.....	".....
Bolles, Frank C.....	".....
Bowles, Edward.....	".....
Bowles, Charles.....	".....
Buskett, E. W.....	".....
Buskett, Mary.....	".....
Buskett, Nancy.....	".....
Case, Allen B.....	Dent county.....
Coffman, E. H.....	Phelps county.....
Coffman, W. S.....	".....
Corey, Stephen J.....	".....
Crandall, A. L.....	Pettis county.....
Dean, Geo. R.....	Waterloo, Ill.....
Deegan, Agnes.....	Phelps county.....
Donahoe, Maymie.....	".....
Dyer, Temple.....	".....
Fargher, John G.....	".....
Fox, Homer.....	St. Louis.....
French, Kate.....	Phelps county.....
Grant, Chas. E.....	".....
Hardin, Benjamin.....	".....
Hazzard, W. R.....	".....
Heller, Samuel.....	".....
Hellmuth, G. W.....	".....
Herdman, Geo.....	Neosho Falls, Kan.....
Hile, Nora.....	Pulaski county.....
Hofstad, N. H.....	Argentine, Kan.....
Holman, W. P.....	Dent county.....
Hume, A. P.....	Washington, D. C.....
Hume, Dorothea.....	Dent county.....
Hutcheson, C. G.....	Halstead, Kan.....
Jackling, D. C.....	Pettis county.....
Johnson, E. M.....	Phelps county.....
Jones, C. H.....	".....
Jones, F. A.....	Jackson county.....
Jones, H. I.....	St. Louis.....
Jones, Lorena.....	Jackson county.....
Jungenfeld, C. E.....	St. Louis.....
Kelley, Chas. M.....	Johnson county.....
Lowe, P. L.....	Jackson county.....
Mansbridge, Elizabeth.....	Phelps county.....
Manheimer, H. K.....	Jefferson county.....
Millard, Fannie.....	Phelps county.....
Millard, Linna.....	".....
Millard, Mary.....	".....
Millard, Sallie.....	".....
Mitchell, E. T.....	".....
Morgan, Minerva.....	".....
Napper, W. H.....	Christian county.....
Napper, T. S.....	".....
Nievert, Waldemar.....	Germany.....

STUDENTS OF SCHOOL OF MINES AND METALLURGY—Continued.

Name.	Residence.
Perry, J. E.....	Phelps county.....
Reid, John.....	Pettis county.....
Robertson, Laura.....	Greenfield, Ill.....
Sappenfield, Estella.....	Phelps county.....
Scherpe, Frederic.....	St. Louis.....
Schwietzer, Geo.....	".....
Seamon, Frank.....	Wheeling, West Va.....
Smith, L. A.....	Greene county.....
Stewart, A. J.....	New Mexico T'y.....
Southgate, Margaret.....	Phelps county.....
Tyrrell, F. L.....	Texas county.....
Vaughan, R. E. L.....	Dent county.....
Walker, J. E.....	Phelps county.....
Walker, J. C.....	".....
Wood, Minerva.....	".....

Number of students at Columbia.....	428
Number of students at Rolla.....	69
Number of students in section No. 2 of Medical school.....	240
Total.....	737

SUMMARIES.

<i>1. Academic Schools.</i>		No. of Students.
<i>a. Language.</i>		
1. English.....	283	
2. Latin.....	270	
3. Greek.....	104	
4. Modern Languages.....	202	
5. Hebrew.....	19	
6. Sanskrit.....	6	
<i>b. Science.</i>		
1. Metaphysics.....	26	
2. Mathematics.....	264	
3. Physics.....	217	
4. Chemistry.....	154	
5. Geology and Mineralogy.....	123	
6. Biology.....	210	
<i>2. Professional Schools.</i>		
1. Agriculture.....	9	
2. Normal.....	50	
3. Law.....	69	
4. Medicine { Section I, 17..... Section II, 240..... }	257	
5. Mining School at Rolla.....	69	
6. Engineering.....	38	
7. Military Science and Tactics.....	175	
8. Drawing.....	41	
9. Commercial.....	87	

STUDENTS AND GRADUATES.

Academic students and graduates of the University from 1843 to 1890, inclusive.

Years.	Number students at Columbia....	Academic Graduates.					Number students at Rolla.....
		A. B....	S. B....	Ph. B....	L. B....	A. D. B.	
1843	78	2					
1844	80	4					
1845	97	3					
1846	108	7					
1847	95	11					
1848	81	6					
1849	88	12					
1850	80	6					
1851	126	8					
1852	143	6					
1853	181	14					
1854*		10					
1855	129	16					
1856	112	13					
1857	171	12					
1858	188	9					
1859	196	9					
1860	140	9					
1861	168	7	2				
1862	64	5					
1863		1					
1864 } Number of students from 1863 to 1865, 121.		2	1				
1865 }		7	2				
1866	104	1	3				
1867	87	7	4				
1868	129	4	3				
1869	144	3	2				
1870	204	1	7				
1871	217		8				
1872	294	3	3	4			
1873	407	3	16	1			75
1874	401	5	4				107
1875	396	4	6	2			101
1876	321	2	10		1		70
1877	399	4	7	1	2		64
1878	418	3	7	1			43
1879	444	6	3	8	1		71
1880	484	12	1	3			71
1881	558	6	11	2			96
1882	509	7	6		5	1	82
1883	491	7	9		10	2	110
1884	502	2	4		5	1	71
1885	459	4	7		5	2	72
1886	454	2	5		2		46
1887	530	8	2		2		59
1888	573	2	3		1	1	50
1889	580	4	8		4		65
1890	428	†	†		†	†	69

In addition to the students above given, there were in the Model School in 1868, 173; in 1869, 50; in 1870, 36; in 1871, 21.

Number of graduates, A. B., from 1843 to 1860, 157; from 1861 to 1888, graduates, A. B., 118; S. B., 136; from 1872 to 1888, graduates, Ph. B., 22; N. S., 1; L. B. 34; A. D. B., 7.

*Number of students not given in our file of catalogues.

†See programme of Commencement exercises.

Years.	Normal Department.				Agricultural Department.			Law.....	Medicine	Engineering.		Mines and Metallurgy.	Total No. of Graduates each year.	
	6 years.		2 years.		D. Ag.	D. H. B.	A. S. Ag. B.			6 years.				
	N. G.	D. B.	Pe. B.	N. D.						Pe. P.	C. E.			T. E.
1869	4											4		
1870	3												3	
1871	4												4	
1872	6												6	
1873		4						6					6	
1874		5		7				13	5				15	
1875		4		18		26		9	6				61	
1876		1		7		8		9	13				47	
1877					6	7		14	5				36	
1878		4			15			20	8				52	
1879		9			9	5		14	6				44	
1880					8			14	9				55	
1881					10		1	28	5	2	4		60	
1882		3			8		4	20	7	6	1		58	
1883					5			13	9	7	1		53	
1884					3			14	4	10	3		66	
1885		9			14			23	4	6	1		61	
1886					20			21	3	4	4		66	
1887		5			18			33	+92	1	2		161	
1888		4			29			35	+92	3	1		179	
1889		7			27			22	105	4	1		175	
1890		*			*			*	*	*	*		*	
	17	14	71	32	172	47	12	307	269	49	22	26	2	

* See programme of the Commencement exercises.

† Graduated from Sec. No. II, Medical College at St. Louis. (See Medical Dep't.)

‡ From 1846 to 1856 there were 372 graduates from the Medical Department, then McDowell's Med. College, St. Louis.

THE SCHOOLS OF THE UNIVERSITY.

I. THE ACADEMIC SCHOOLS.

A. LANGUAGE.

- I—English.
- II—Latin.
- III—Greek.
- IV—Modern Languages.
- V—Hebrew.
- VI—Sanskrit.

B. SCIENCE.

- VII—Metaphysics.
- VIII—Mathematics.
- IX—Physics.
- X—Chemistry.
- XI—Geology and Mineralogy.
- XII—Biology.

II. THE PROFESSIONAL SCHOOLS.

- XIII—1. Agriculture.
- XIV—2. Pedagogics.
- XV—3. Law.
- XVI—4. Medicine.
- XVII—5. Mining and Metallurgy.
- XVIII—6. Engineering.
- XIX—7. Military Science and Tactics.
- XX—8. Art.
- XXI—9. Commercial.

I. SCHOOL OF ENGLISH.

Professor ALLEN—Assistant, Professor PENN.

Instruction is given in four courses corresponding to the scheme of work in the English language and literature, as laid down in the Literary (L. B.) course.

Less of books about the literature and more of the literature itself has been the leading thought in organizing these courses of study.

Methods of instruction: Lectures, text-books and recitations.

I. (FRESHMAN). A course of reading, mainly biographical and historical, is prescribed, from which are drawn subjects and material for essays. The principles of written discourse are taught by text-book and lecture—two hours a week.

Text-book: Clark's Practical Rhetoric.

II. (SOPHOMORE). The history of English literature and the history of the English people are begun at the same time and carried on alternately—history twice, literature three times a week. History is completed the first term, literature continues through the second. The classics of the modern period—beginning with Chaucer and following, in historical order, with Spenser, Shakspeare, Bacon, Milton and other representative writers in prose and verse—are studied and critically read in the class-room through both terms. Besides, parallel readings from these and other authors are assigned for private study. Essays on literary and historical subjects are regularly required.

First term: Five hours a week. Second term: Three hours a week.

Text-books: Stopford Brooke's History of English Literature; Montgomery's English history; English Classics (Clarendon Press Series.)

For reference: Green's History of the English People; Minto's Manual of English Prose; Ward's English Poets; Saintsbury's Elizabethan Literature; Stedman's Victorian Poets.

III. (JUNIOR.) In the first semester the history of the English language is given by lectures and text-book, and master-pieces of the literature are read with special reference to the structure of the language. Three hours a week.

In the second semester the time is given wholly to the study, in style and invention, of modern prose. Essays are required of this class at regular intervals. Three hours a week.

Text-books: 1st semester, Lounsbury's History of the English Language; Sweet's Anglo-Saxon Primer; English Classics.

2d semester: Genung's Rhetorical Analysis; Prose Authors.

IV. (SENIOR). The studies in this course are philological rather than literary. The historical study of the language is pursued through both semesters, beginning in the first semester with the oldest forms of the language, and continuing, by the study of specimens, to the close of the old English (Anglo-Saxon) period, about 1150 A. D. Two hours a week. (Elective).

In the second semester the study of specimens is continued through the middle English period to about 1350; then on through the age of the founders, Langland,

Wicliff, Chaucer, to 1400—a date which marks the death of Chaucer, and brings us into the modern English period, where the literature of course II begins. Two hours a week. (Elective).

Text-books: First Semester, Sweet's Anglo-Saxon Reader; Earle's History of Anglo-Saxon Literature.

2d semester, Sweet's Primer of Middle English; Morris and Skeat's Specimens of Early English. Part II.

A post-graduate course is provided for students desiring to carry on further their studies in English. The following will indicate in a general way the work done in this course:

Prose Readings: Beowulf; March's Comparative Grammar. Original work in English Philology is required in this class.

Preparatory courses introductory to the Freshman class are outlined in the schedule of preparatory work. They embrace a thorough course of grammar and analysis, composition and rhetoric, U. S. history and American literature.

A special medal, known as the "McAnally Medal," is offered for competition in the Senior year. It is for the best essay, thesis or poem by members of the Senior class, competing under certain rules laid down by the founder of the prize.

The subject for 1889-90 is "The Literature of the South."

ENROLLMENT OF STUDENTS.

Post-graduate.....	1
Anglo-Saxon (elective).....	11
Middle English (elective).....	10
Junior.....	36
Sophomore.....	44
Freshman.....	55
PREPARATORY.	
Second year.....	79
First year.....	99
Total enrollment.....	335
Individual students.....	283

II. SCHOOL OF LATIN LANGUAGE AND LITERATURE.

Professor FISHER—Professor JONES, *Associate*.

The subjects taught in this department are the Latin Language and Literature; the Geography, Mythology, Antiquities and History of the Romans.

FRESHMAN CLASS.

First Semester.—Caesar, *De Bello Gallico*; Grammar to Prosody; Prose Composition to chapter VIII; Classical Geography and Mythology.

Second Semester.—Virgil—*Æneid*; Composition to chapter X; Reading at Sight; Mythology Completed and Reviewed.

SOPHOMORE CLASS.

First Semester.—Livy, Sallust, Grammar, Composition to chapter XIX, Antiquities.

Second Semester.—Horace—Odes and Epodes, Prosody, Composition to Part II, Antiquities.

JUNIOR CLASS.

First Semester.—Horace—Satires and Epistles, Tacitus, Agricola, Grammar, Composition, Part II, Roman History, Lectures.

Second Semester.—Cicero—Tusculans, De Amicitia, De Senectute, Grammar, Composition, Part II to page 263, Translations into Latin, Roman History

SENIOR CLASS.

First Semester.—Plautus—Captives, Critical Study of the Grammar, Translations into Latin, Lectures in Latin, Selections from the Poets, Lectures on Ancient and Modern Rome.

Conversation in Latin and reading at sight are required of all classes. Translations at sight of passages from both prose and poetry *will be required of all who seek admission to the University classes.* The English pronunciation is carefully taught and strictly followed in the class-room. The Junior and Senior classes are made acquainted with the Roman mode also, and are taught to use it. During the course lectures will be delivered to all the classes in the department on Archæology and Art. The means of illustration in this direction are equal to any in use in our country.

TEXT-BOOKS.

Harkness' Grammar, Cæsar; Arnold's Composition; Greenough's Virgil; Baird's Classical Manual; Smith's Horace; Creighton's History of Rome; Ramsey's Plautus; Tyler's Tacitus; Crowell's Selections from the Latin Poets; Cope's Livy; Chase & Stuart's Tusculans.

BOOKS OF REFERENCE.

Harper's Latin Dictionary; Smith's Dictionary of Roman Antiquities; Mommsen's History of Rome; Teuffel's History of Roman Literature; Ramshorn's Latin Synonyms; Becker's Gallus; Daubeney's Roman Agriculture; Guhl and Koner's Life of the Greeks and Romans; Grammars of Gildersleeve, Madvig and Roby; Fisher's Three Pronunciations of Latin.

Requirements for admission.—Students will be admitted to the Freshman class upon passing an examination on the whole of Collar & Daniell's Beginner's Book. In the late revision of the University courses, the requirements for admission to the Freshman class were lessened in order to bring the University into articulate connection with the high schools and academies of the State. This has been effected, however, without making any decrease in the total number of hours' work required to complete the department.

PREPARATORY.

First Semester.—Collar & Daniell's Beginner's Latin Book to chapter XXXIX; Fisher's Three Pronunciations of Latin, chapter I.

Second Semester.—Collar & Daniell's Beginner's Latin Book completed. When the verb is reached the class masters the whole verb, not simply parts of it.

AGRICULTURAL COLLEGE COURSE.—This course consists of two years, and embraces the first two years of the above course.

Schools whose work has been brought into articulate connection with that of the University are referred to the terms of admission as given below.

ELECTIVE COURSES.

I.

Poets: Juvenal and Martial, two hours a week.
Roman Philosophers, two hours a week.

II.

Lectures on Archæology, two hours a week.
Lectures on the Fine Arts, three hours a week.
Teacher's Course, two hours a week.

III.

For L. B. students, same as Juniors in A. B. course.

IV.

For L. B. students, same as Senior in A. B. course.

The department has a collection of photographs, slides, inscriptions, charts, maps, rubbings and antiquities, recently brought from Italy, of great value in the prosecution of the higher scholarship. The set of imperial coins is of peculiar interest. The elective courses of the Junior and Senior years offer special opportunities in rapid reading, interpretation of authors and archæology. A training course is offered in the Senior year to those desiring to fit themselves to teach the classics. Lectures will be given on methods of teaching Latin; practice in writing Latin; interpretation and criticism of selections from Virgil, Cæsar and Cicero.

STUDENTS IN THE SCHOOL OF LATIN.

ADMISSION BY SEMESTERS.

First Semester.....	188.
Second Semester.....	205
Class in Ethics (Second Semester).....	23
Total by Semesters	416
Whole number enrolled without duplication	270

The Appleton prize is offered for competition in the Junior and Senior classes. It will be awarded in 1890-91 to the student who makes the best translation into Latin of Ben Hur, Book V, chap. XII, beginning with the words "There was a basement first," and closing with "Such are the cries." At the commencement of 1889 the Appleton prize was awarded to Mr. J. H. Coons.

III. SCHOOL OF GREEK AND COMPARATIVE PHILOLOGY.

Professor FLEET—Professor JONES, Associate.

The subjects taught in this department are the Greek Language and Literature, the Geography, History, Mythology and Antiquities of Greece and Comparative Philology.

In the early classes the student is thoroughly drilled in the inflections of the language, and the forms are constantly impressed upon the memory by written translations from Greek into English and from English into Greek. These written exercises, generally taken from the Grammar, are continued daily for the first two years. Throughout the rest of the course, translations from the best Greek authors are regularly made by the Professor, and the students are required to render these back into the original, or some good book on Greek prose composition is used. These exercises are criticised and returned, and full explanations given of the principles involved. In this way the syntax is illustrated by all the different constructions which occur in the language.

In the translation of the classic authors, a close and critical examination is made of the text assigned for reading, the peculiarities of the author's style are brought out, and the contents of the language, as illustrated in the light of Comparative Philology, are constantly discussed.

FRESHMAN CLASS.

First Semester—Harkness' First Greek book.

Second Semester—Xenophon's Anabasis, Hadley-Allen's Greek Grammar, Jones' Greek Prose Composition, Geography.

SOPHOMORE CLASS.

First Semester—Xenophon's Hellenica, Hadley-Allen's Greek Grammar, Jones' Greek Prose Composition, History.

Second Semester—Herodotus, Prose Composition, Grammar, Antiquities.

JUNIOR CLASS.

First Semester—Homer (Odyssey), Prose Composition, Lectures on Grammar, Gladstone's Primer.

Second Semester—Plato, Prose Composition, Lectures on Grammar, Literature, Electives.

SENIOR CLASS.

First Semester—Sophocles, Lectures on Greek Art, Comparative Philology.

Second Semester—Thucydides, Comparative Philology, Modern Greek.

TEXT-BOOKS.

Harkness' First Greek book; Hadley-Allen's Grammar; Jones', Allinson's Sidgwick's Greek Prose Composition; Goodwin's Moods and Tenses; Tozer's Classical Geography; Fyffe's History of Greece; Mahaffy's Old Greek Life; Jebb's Greek Literature; Peile's Comparative Philology; Vincent and Dickson's Handbook of Modern Greek; Modern Greek Magazines; Long's Classical Atlas; Yonge's English-Greek Lexicon; Liddell and Scott's Greek-English Lexicon.

ELECTIVE COURSES.

In the Junior and Senior years two Elective Courses are provided for students in the A. B. course.

I. *First Semester*—Greek, $2\frac{1}{2}$ hours weekly; Attic Orators.

Second Semester—Greek, $2\frac{1}{2}$ hours weekly; Lyric Poetry.

II. *First Semester*—Greek, 2 hours weekly; Archæology.

Second Semester—Greek, 5 hours weekly; Comic Poetry, Modern Greek.

During the whole course, lectures on Greek Art will be delivered to all the students in the department. These lectures will be illustrated by several hundred views, representing every phase of ancient architecture, sculpture and statuary, thus giving the students such an idea of the perfection of Greek art as they could not acquire by lectures alone.

Report—The number of students in the Department of Greek and Comparative Philology during the year 1889-90:

Senior Class.....	8
Junior Class.....	3
Sophomore Class.....	9
Sub-Sophomore Class.....	29
Freshman Class.....	33
Total by classes.....	82
Greek Education—Normal Class.....	22
Total instructed in Greek Department.....	104

IV. SCHOOL OF MODERN LANGUAGES.

Professor BLACKWELL—*Assistant*, Professor HOFFMAN.

The work actually done in modern languages during the year 1889-90 comprises the study of German, French, Spanish and Italian grammars by classes formed for those languages. In German, classes read "Aus dem Leben eines Taugenichts, der gefrorene Kuss," Heine's "Harzreise," "Faust," with lectures on the literature and language. In French, classes read Joynes' "Reader, Les Tableaux de la Revolution Francaise, Le Roman d'un Jeune Homme pauvre," "Choix d'Extraits de Daudet," "Bug Jargal" of Victor Hugo, and Gautier's "Voyages en Russe;" work in composition and in synonyms. In Spanish, the class read "La Grammatica" (a comedy), "El Numero Trece," by D. Jose Selgas, "La Revolucion de 1820," by D. Ramon de Mesonero Romanos, "Carlos V y Felipe II," by Sir Canovas de Castillo, "La Filosofia Espanola," by D. Juan Valera, followed by Knapp's advanced lessons. In Italian, the class read the novel "La Rosa dell Alpi," and the first cantos of Tasso's "Giurusalemme Liberata."

GERMAN.

I. Whitney's Brief German Grammar, Elementary Reader.

II. Whitney's Revised Grammar; Reader completed; Blackwell's Manual of Prefixes and Suffixes, weekly recitations.

III. Grammar, weekly recitations; Literary and Scientific Prose Readings; Manual completed; Studies in Synonyms.

IV. Prose composition daily; Heine's "Harzreise," "Goetz von Berlichingen;" Study of Style; lectures on Language and Literature weekly.

Classes recite every day in the L. B. and S. B. courses.

OPTIONAL COURSE IN GERMAN.

V. Egmont; Study of the Drama; The Laocoon.

VI. Nathan der Weise; Themes; Schiller's Tell.

VII. Faust; Themes.

VIII. Studies in Herder, Richter and Schiller; General Review.

Composition throughout the Optional course.

Equivalent work to the above course will receive acknowledgment.

All optional studies to be timed at the convenience of the professor and students.

The post-graduate course will embrace studies in Middle High German, (Paul's "Mittel hochdeutsche Grammatik, der arme Heinrich, the Nibelungenlied,") Old High German, and Comparative Teutonic Philology.

FRENCH.

I. Joynes'-Otto's Introductory French Lessons and Reader.

II. Grammar and Reader completed; "Tableaux de la Revolution Francaise."

III. "Le Roman d'un Jeune Homme pauvre," by Octave Feuillet; "Le Romantisme Francaise;" Composition.

IV. Composition; Study of Synonyms; "Le Nabab," by Alphonse Daudet; Moliere's "Bourgeois Gentilhomme;" Lectures on the Language and Literature.

Classes meet four times a week in the Freshman, and three times a week in the Sophomore year.

OPTIONAL STUDIES.

V. "Eugenie Grandet," by Balzac; Selections from Moliere; Study of Style; Themes.

VI. "Numa Roumestan," by Daudet, selections; Lamartine's Poems, selections; "Ruy Blas," by Victor Hugo; Study of Prosody; Themes.

VII. Selections from "Les Miserables" of Victor Hugo; "Les Trois Mousquetaires," by A. Dumas; Themes.

VIII. Studies in Racine and Corneille, and the Drama; General Review of the work.

Composition throughout the Optional course.

Equivalent work will receive acknowledgment.

All optional studies to be timed at the convenience of the professors and students.

Post-graduate studies embrace work in Old French, the "Langue d'Oil," Provençal (Bartsch, Burguy, Kitchin,) and Romance Philology (Diez, Meyer, French editions of both preferred.)

OPTIONAL STUDIES.

SPANISH.

- I. Knapp's Grammar and "Lecturas de Clase."
 - II. Grammar continued; Knapp's Readings.
 - III. Gaspar's "Castigode Dios;" Selections from Don Quixote.
 - IV. Lope de Vega's "Dorotea;" selections from the Cancioneros; History of Spanish Literature (Ticknor.)
- Post-graduate studies will include studies of Calderon, "Garcilasso de la Vega," and attention to Catalanian and Valencian Literature.
- These studies at the time and convenience of the professor.

ITALIAN.

- I. Grandgent's Grammar; Easy Readings.
 - II. "Il Marco di Visconte;" Fanfani's Synonyms.
 - III. Calogero's "Novelle Calebresi;" Tasso's "Giurusalemme Liberata," four cantos.
 - IV. The Prince of Machiavelli; selections from the Purgatorio of Dante; History of the Literature.
- Post-graduate studies will include studies in Ariosto, Petrarch, (Le Rime and Le Lettere, especially,) Dante, and modern poets.
- These studies at the time and convenience of the professor.

PORTUGUESE.

- I. Cabano's Grammar; Historia do Brazil (Ginn.)
- Four semesters in Spanish, or Italian or French, necessary for entrance.
- At the time and convenience of the professor.

RUSSIAN.

- I. Reiff's Grammar; Riola's Reader.
 - II. Reiff and Riola continued; Vogue's "Russkiye Pisateli."
 - III. Selections from Tolstoi's "Voina i Mir."
- Candidates must have had four semesters in German, or Latin, or Greek.
- At the time and convenience of the professor.
- Total enrollment of students in modern languages in the year 1889-90, 202.

V. SCHOOL OF SEMITIC LANGUAGES,

Professor BLACKWELL.

There were three classes in Hebrew in 1889-90. The first division studied Harper's Method and Manual; the second read Genesis, and the third, the first book of Samuel.

HEBREW.

- I. Harper's Method and Manual.
- II. Harper's Elements; Books of Ruth and Esther.
- III. Harper's Syntax; The Psalms; Driver's Tenses; Ancient History.
- IV. Study of Isaiah (Alexander, Cheyne and Delitzsch); Wickes' Accent.

Post-Graduate studies will include post-biblical literature, the Pirke Aboth from the Mishna (Taylor), and the Pentateuchal Question.

(Delitzsch, Dillmann, Wellhausen, Kuenen, Bissell, Harman, Harper, Green and others.)

ARAMAIC.

- I. Brown's Grammar and Reader.
- II. The Targums.

Two semesters of Hebrew are necessary for entrance.

SYRIAC.

- I. Nestle's Grammatik and Chrestomathie.
- II. Bagster's Peshitto New Testament and Lexicon.

Two semesters in Hebrew necessary for entrance.

ARABIC.

- I. Lansing's Grammar and Chrestomathy.

II. Wright's Reading Lessons; Wortabet's Dictionary; first two surahs of the Koran.

Two semesters of Hebrew are necessary for entrance.

Instruction and lectures to nineteen in the school of Semitic Languages in 1889-90.

VI SCHOOL OF SANSKRIT-

Professor BLACKWELL.

- I. Perry's Sanskrit Primer; Whitney's Grammar.
- II. Story of Nala; Hitopadeca; Dharmacastra.
- III. Hymns to Agni and Varuna, and the Funeral Hymns of the Rigveda; Brahmanas.

Six students pursued this work in the year 1889-90.

VII. SCHOOL OF METAPHYSICS.

Professor———.

Psychology—Lectures: Hamilton's Metaphysics, Mahan's System and Sully's Outlines.

Logic—Lectures: Jevons, Hamilton, Mill.

Ethics—Lectures: Paley, Wayland, Alexander, Lieber's Political Ethics, Porter.

Social Science—Lectures: Lieber's Civil Liberty, Spencer's Sociology.

Philosophy—Lectures.

The History of Philosophy—Lectures: Schwegeler, Ueberweg.

Notes on all lectures are required, criticised and graded for literary character, as well as for matter. The instruction is chiefly by lectures.

Æsthetics and Political Economy.

Constitutional and International Law—The academic students join the law class in these subjects, and also receive from that department instruction in the law of contracts.

VIII. DEPARTMENT OF MATHEMATICS AND ASTRONOMY.

Professor SMITH—Assistant Professors CAUTHORN, TINDALL, CLENDENIN.

The following courses are proposed:

1 and 2. Solid Geometry, Trigonometry and Spherical Astronomy, with varied practice in the Observatory. Texts: Wilson's Solid Geometry, Smith's Clue to Trigonometry, Young's General Astronomy, pp. 1-90, Freshman, both Semesters—Tuesday, Thursday, Saturday, at 2 p. m.—Cauthorn.

3 and 4. Select Topics in Algebra (Smith's Treatise), beginning with chapter XXI. Freshman, both Semesters—Wednesday and Friday, at 2 p. m.—Tindall.

5 and 6. Plane Co-ordinate Geometry (Smith's). Sophomore, First Semester, (pp. 1-60), Tuesday and Thursday at 3 p. m.; Second Semester (pp. 60-176), Tuesday Wednesday, Thursday, Friday, at 3 p. m.—Smith.

7. Determinants (Burnside and Panton's Theory of Equations, pp. 228-288.) Sophomore, First Semester, Saturday—Tindall.

8. General Astronomy (Young's, from p. 91). Senior, Second Semester, Tuesday, Thursday, Saturday, at 12 m.—Smith.

All the foregoing courses are required for the degrees of S. B., and all except 3, 4, 7, for the degree of A. B. and L. B.

ELECTIVES.

9 and 10. Infinitesimal Calculus (Byerly's Texts). Junior, both Semesters, Tuesday, Thursday, Saturday, at 7:30 a. m.—Tindall.

11 and 12. Theory of Equations and Quantics (Burnside and Panton's Text, except pp. 228-238.) Junior, both Semesters, Wednesday and Friday, at 7:30 a. m.—Tindall.

13 and 14. Solid Co-ordinate Geometry (Smith's or Frosts.) Junior, both Semesters, Tuesday, Thursday, Saturday, at a convenient hour.—Smith.

15. Curve Tracing (Frost's Text.) Junior, First Semester, Wednesday and Friday, at a convenient hour.—Smith.

16. Planetary Theory (Dziok's Theorien der Planetenbewegungen.) Senior, First Semester, three or five times weekly at a convenient hour.—Smith.

17 and 18. Infinitesimal Calculus applied to the Doctrine of Rest and Motion. (Text to be chosen.) Senior, both Semesters, Tuesday, Thursday, Saturday, at a convenient hour.—Smith.

19 and 20. Differential Equations (Forsyth's Text.) Senior, both Semesters, Wednesday and Friday at a convenient hour.—Smith.

Post-graduates may be directed in reading Biermann's Theorie der Analytischen Functionen (nach Weierstrass.)

The elective courses, 9-20, are subject to considerable variation of topics from session to session, according to the conjoint judgment of teachers and electors.

The uniform condition of admission to any course is knowledge presumptively adequate to profitable pursuit of the subject in question; but all except special students, and they so far as practicable, are strongly urged to keep their work abreast with itself—not to attempt in the same year studies classified as belonging to different years. For courses 1 and 3 in the first term of the Freshman year, such knowledge is assured by mastery of the first 326 pages of Smith's Treatise on Algebra (Macmillan & Co.,) and of the first 177 pages of Dupin's Elementary Synthetic Geometry (Macmillan & Co.) No degree of familiarity with the accepted texts can be reckoned as equivalent to such mastery, for the point of view in the works named is altogether another—a modern and a higher—yet the student presumably prepared to make good, if not the best, progress in Solid Geometry and Trigonometry, may be admitted conditionally to the Freshman class. The courses in this latter presuppose only a little more than one year's study of Algebra, and a little less than one year's study of Geometry, but with proper aids.

THE OBSERVATORY

Is furnished with a telescope (equatorial refractor aperture, $7\frac{1}{2}$ in., focal length 10 ft., 7 in.) meridian circle, alt-azimuth instrument, transit theodolite, sextant with mercurial horizon, sidereal clock, solar clock, chronograph, tele-spectroscope, celestial globe. Students of Spherical Astronomy spend considerable time in the Observatory, and are taught individually to use these instruments in making all the ordinary astronomical measurements and determinations.

THE PREPARATORY COURSES

Extend through two years, with recitations five times weekly, as follows:

Ia. Algebra (Smith's Elementary, pp. 1-207, and the first 15 pp. of chap. xxvii, with the first 44 examples of set lx), both Semesters, Tuesday, Thursday, Saturday.

Ib. Geometry (Dupin's Elementary Synthetic, pp. 1-118, to Areal Relations), both Semesters, Wednesday and Friday.

IIa. Algebra (Smith's Treatise, pp. 143-326), both Semesters, Tuesday, Thursday, Saturday.

IIb. Geometry (Dupin's Elementary Synthetic), pp. 119-251, both Semesters, Wednesday and Friday.

These courses are required for the Normal certificate, for the Agricultural diploma (B. A. S.,) and in either they are what may be treated as equivalent for admission to the Freshman class.

Candidates for course I will be examined in Arithmetic to ascertain whether they have knowledge sufficient for the successful study of Algebra. Such as display knowledge thus sufficient, if it be yet incomplete or imperfect with respect to some part of Arithmetic, may yet be admitted to the course on condition of making good the deficiency before promotion to a higher class.

ENROLLMENT.

The numerals in parenthesis refer to the courses.

COLLEGIATE.		PREPARATORY.	
Geometry, Trigonometry, etc. (1, 2).....	49	Elementary Algebra (<i>Ia</i>).....	159
Advanced Algebra (3, 4).....	17	Elementary Geometry (<i>Ib</i>).....	157
Co-ordinate Geometry (5, 6).....	33	Mediate Algebra (<i>IIa</i>).....	33
Determinants (7, 7a).....	17	Mediate Geometry (<i>IIb</i>).....	34
General Astronomy (8).....	15	Individuals.....	197
Infinitesimal Calculus (9, 10).....	10		
Theory of Equations and Quantics (11, 12).....	4	Total Collegiate.....	156
Differential Equations (19, 20).....	7	Total Preparatory.....	383
Algebra (Special Elective).....	4		
Individuals.....	90	Total in the department.....	539
		Total of individuals.....	264

In the enfeebled state of Prof. Cauthorn's health, his duties, in greater part, have been discharged faithfully and efficiently by Lieut B. B. Buck, U. S. A., commandant.

IX. SCHOOL OF PHYSICS.

Emeritus Professor NORWOOD.

Professor LIPSCOMB—Professor McRAE, Assistant.

The work in this school consists of class and laboratory as follows :

Physics I. Lectures and recitations four times per week during the first semester.

Requisite for admission, a passing grade in the First Preparatory.

Physics II. Lectures and Recitations five times per week during the second semester. Requisite for admission, a passing grade in the Mathematics of the first semester of the Freshman year.

Physics III.—Laboratory work once per week (2½ hours) in the A. B. and L. B., and twice per week in the S. B. Requisite for admission, a passing grade in Physics II.

Physics IV.—Mechanics twice per week during the first semester, and three times per week during the second semester. Requisite for admission, a passing grade in Physics II and Analytical Geometry.

Physics V.—Physical Theory four times per week during the first semester. Requisite for admission, a passing grade in Physics II and the Mathematics of the Sophomore year.

Physics VI.—Experimental Physics with Laboratory work for advanced students twice per week. Requisite for admission, a passing grade in Physics III and V

ELECTIVE COURSES.

Physics VII.—Electricity and Magnetism four times per week during the second semester. Physics V may be taken as an Elective by students in the A. B. and L. B. courses.

Physics VIII.—Laboratory work. The number of hours per week to be arranged by the student and the Professor in charge.

APPLIED PHYSICS.—After a knowledge of the fundamental principles of Physics has been obtained, students are admitted to the Physical Laboratory.

The minimum course ($2\frac{1}{2}$ hours per week for one term) will include accurate weighing; determination of specific gravity by different methods; laws of the pendulum; moduli of elasticity; barometric observations and measurement of elevation by the same; calibration of thermometers; specific and latent heat; coefficient of expansion; pitch of vibrating strings; measurement of focal length; curvature and index of refraction; magnetic lines of force; measurements of the electromotive force, resistance and current strength of batteries, etc.

The maximum course (5 hours per week for two terms), in addition to the above, will include coefficient of friction; velocity of sound; photometry; spectroscopy and its applications to chemical analysis; determination of the horizontal component of the earth's magnetism; the dip of the magnetic needle; construction and care of batteries; galvanometer; voltameter; condenser; electrometer; Wheatstone's Bridge and Kirchhoff's Laws; polarization and electrolytic resistance; temperature coefficient of resistance; study of magnetic constants and calibration of commercial instruments; telegraph, telephone and cable systems; dynamos and motors; electric light and power transmission, etc.

A fee of five dollars in advance per semester will be charged Laboratory students.

Text-books and Books of Reference.—Deschanel's Natural Philosophy; Ganot's Physics; Maxwell's Theory of Heat; Thompson's Lessons in Electricity; Daniell's Principles of Physics; Glazebrook and Shaw's Practical Physics; Kohlrausch's Physical Measurements; Pickering's Physical Manipulations; Trowbridge's New Physics; Stewart and Gee's Practical Physics; Everett's Physical Constants; Kempe's Handbook of Electrical Testing; Ayrton's Practical Electricity; Thompson's Dynamo-Electric Machinery; Kapp's transmission of Electrical Energy; Gray's Absolute Measurements; Maxwell's Electricity and Magnetism; Wiedemann's Elektrizität; Houston's Dictionary of Electrical Terms, Phrases, etc.

ENROLLMENT OF STUDENTS FOR YEARS 1889-90.

Physics I.....	63
Physics II.....	67
Physics IV.....	14
Physics V.....	8
Physics VII.....	12
LABORATORY.	
Physics III., Min. course 23, Max. course 25.....	48
Physics VI.....	5
Total.....	217

X. DEPARTMENT OF CHEMISTRY.

Professor SCHWEITZER.

CLARENCE L. SPEYERS, PH. B., First assistant.

SILAS DINSMOOR, PH. B., Second assistant.

I. ARRANGEMENT OF CLASSES BY SEMESTERS.

FIRST SEMESTER.

- 10-11. (5 hours.) Phenomenal Chemistry, Schweitzer, Speyers.
 11-12. (3 hours.) Rational Chemistry, Schweitzer.
 11-12. (2 hours.) Organic Chemistry, *optional*, Schweitzer.
 Quantitative Analysis, Speyers.

SECOND SEMESTER.

- 9-10. (2 hours.) Thermo-chemistry, *optional*, Speyers.
 9-10. (3 hours.) Thermo-dynamics, *optional*, Speyers.
 10-11. (2 hours.) Physiological Chemistry and Toxicology, Schweitzer.
 10-11. (3 hours.) Applied Chemistry, Schweitzer.
 11-12. (3 hours.) Agricultural Chemistry, Schweitzer.
 11-12. (2 hours.) Applied Chemistry, Schweitzer.
 Qualitative Analysis, Speyers.
 Young Chemist, Dinsmoor.

II. CONSECUTIVE ARRANGEMENT OF CLASSES.

1. Phenomenal Chemistry, Freshman year, first semester.
2. Laboratory work, Young Chemist and Qualitative Analysis, Sophomore year, second semester.

3. Rational Chemistry, Junior year, first semester.
4. Organic Chemistry, Junior year, first semester, *optional*.
5. Physiological Chemistry and Toxicology, *professional*.
6. Applied Chemistry, Junior year, second semester, *optional*.
7. Laboratory work, Quantitative Analysis, Junior year, second semester.
8. Agricultural Chemistry. *professional*.
9. Thermo-chemistry, Senior year, first semester, *optional*.
10. Thermo-dynamics, Senior year, first semester, *optional*.
11. Laboratory work, selected subjects in Quantitative Analysis, Senior year, first and second semester.

III. SYNOPSIS OF WORK.

FRESHMAN YEAR, FIRST SEMESTER.

1. *Phenomenal Chemistry*, 5 hours, 10-11 a. m., an elementary course of instruction, consisting in experimental demonstrations of the facts of the science, and embracing both the metalloids and the more common of the metals; calculations of quantities by weight and volume, of changes in the volume of gases by changes of temperature and pressure, writing of reactions, and establishing of formulas upon proper physical facts, accompanying the work. (Ira Remsen: An introduction to the study of chemistry.)

SOPHOMORE YEAR, SECOND SEMESTER.

2. *Chemical Laboratory*, $2\frac{1}{2}$ hours in course in Arts and Letters, and 5 hours in course in Science; in the former the student is trained in the use of apparatus and the art of making experiments; the experiments are simple, illustrative of the properties of substances and adapted to district school teaching. (Appleton: The Young Chemist.) In the latter, qualitative analysis follows preceding work; practice is given in the separation and detection of all the more common bases and acids in simple compounds as well as in complex mixtures. (Curtman: Lessons in qualitative and volumetric chemical analysis.)

JUNIOR YEAR, FIRST SEMESTER.

3. *Rational Chemistry*, 3 hours, 11-12 a. m.; the principles of Chemical Philosophy, with a general review of inorganic chemistry. (Coke: Principles of Chemical Philosophy, Part I.)

4. *Organic Chemistry*, 2 hours, 11-12 a. m.; a general view of subject; detailed treatment of monatomic alcohols, acids and derivatives; aromatic compounds; compound ammonias; alkaloids.

JUNIOR YEAR, SECOND SEMESTER.

5. *Physiological Chemistry and Toxicology*, 2 hours, 10-11 a. m.; general introduction; constituents of the body; inorganic histogenic and products of retrogressive metamorphosis; blood and related fluids; milk and other secretions; urine, healthy and pathological.

Poisons, their classification, description, recognition; action of poisons; their detection and isolation in judicial investigations.

6. *Applied Chemistry*.—This subject is divided into two distinct courses.

a. Public Health and Hygiene, 2 hours, 11-12 a. m.: Air, respiration, vitiated air and ventilation; infection, contagion, germ theory of disease. Water, potable

water, hard and soft; impurities in it, such as lead and sewage matter, and their effects upon health and life; mineral and other waters. *Food*, composition and general properties; bread, meat, milk, sugar; preservation of food, and food adulterations. *Illuminants; Disinfectants; Antiseptics.*

b. Selected Chemical Industries, 3 hours, 10–11 A. M.

5. *Chemical Laboratory*, 5 hours; quantitative analysis of ten compounds. (Cairns: *Manual of Quantitative Chemical Analysis.*)

Agricultural Chemistry, 3 hours, 11–12 A. M.; general introduction; function of the plant, including production, conversion, transportation, deposition of organic matter; physiological structure of the cell; respiration; the green cell an apparatus for doing work dependent upon light and heat; nitrogenous constituents of the plant and their relation to free and combined nitrogen; mineral constituents; membrane diffusion; assimilation; condition of vegetation.

Soil, its formation, composition, alteration by mechanical, chemical, biological agencies; its relation to light, heat, moisture.

Manures, natural and artificial; their composition, application, value.

SENIOR YEAR, FIRST SEMESTER.

9. *Thermo-chemistry*, 2 hours, 9–10 A. M.; historical sketch of subject; conservation of mass and energy; mechanism of molecules; calorimetry; thermal methods and problems. (Muir: *The Elements of Thermal Chemistry.*)

10. *Thermo-dynamics*, 3 hours, 9–10 A. M.; historical view of Chemistry and Physics—a. from Aristotle to beginning of 19th century, two weeks, from 19th century to present time, one week. (Kopp, *Geschichte der Chemie*; Poggendorff, *Geschichte der Physik*); b. discussion of Berthollet's theory, (Berthollet, *Essai de statique chimique*) one week. Study of application of Thermo-dynamics to solving chemical and physical problems. Instruction by lectures, based upon P. Duhem: *Le Potentiel Thermo-dynamique et ses Applications*; Calculus required.

11. *Chemical Laboratory*, 2½ hours; selected subjects in practice of Quantitative Analysis.

SENIOR YEAR, SECOND SEMESTER.

12. *Chemical Laboratory*, 2½ hours; selected work.

IV. NUMBER OF STUDENTS IN THIS DEPARTMENT DURING THE SCHOLASTIC YEAR JUST ENDED.

85 students in Phenomenal Chemistry, 12 divisions.

12 “ Rational Chemistry.

21 “ Applied Chemistry.

3 “ Agricultural Chemistry.

17 “ Urinary Analysis.

11 “ Organic Chemistry.

105 “ Laboratory, of whom (a) 58 Young Chemist.

(b) 36 Qualitative Analysis.

(c) 11 Quantitative Analysis.

254 students.

The class in Toxicology, the Normal class and the Junior Law class will receive instruction in this department between now and the end of the semester.

XI. SCHOOL OF GEOLOGY AND MINERALOGY.

Prof. G. C. BROADHEAD—W. W. CLENDENIN, *Assistant*.

MINERALOGY AND LITHOLOGY.

Only students in the Science course are required to take the course in Mineralogy and Lithology.

All Science students receive instruction in this course four days of each week during the 2d semester of the Junior year.

In Physical Mineralogy, students will be given instruction in Crystallography, until they have become familiar with all the more common forms of crystals; will be taught to measure the angles of crystals; will study the physical characters of Minerals, such as H. Sp., Grav., effect upon light, action under polarized light, etc.

To students who do not make Mineralogy and Lithology a special study, but little instruction in chemical mineralogy will be given, only touching the action of the more common minerals and ores with acids and blowpipe. Most of the work will be done in descriptive mineralogy, taking up those minerals which are important (a) in rock making, (b) as ores of useful metals, (c) as constituting gems, and (d) on account of their economic value. Especial attention will be given to Missouri minerals. The course in Lithology embraces the study of the composition, structure and origin of the most important rocks.

To students who elect to do special work in Mineralogy and Lithology will be furnished facilities for work in Mathematical Crystallography and optical investigations of minerals; also a systematic and comprehensive course in Determinative Mineralogy; and in Lithology, students will be assisted so far as the facilities afford.

Fees to cover use of apparatus and material will be charged.

For admission into class in Mineralogy students are required to have taken a course in Chemistry.

Text and reference books:

J. D. Dana's "Manual of Mineralogy;" E. S. Dana's "Text-book of Mineralogy;" Brush's "Blowpipe Analysis;" Elderhorst's "Determinative Mineralogy;" Van Kobell's "Work on Determinative Mineralogy."

PHYSICAL AND ECONOMIC GEOLOGY AND MINERALOGY.

Instruction in this course will be given to the agricultural and engineering students. The instruction is by lectures upon Economic Geology and Mineralogy, Lithology, Physical Geology and Geological Surveying—embracing the study of building materials, decomposition of rocks and production of soils, useful minerals occurring in veins and beds, coal deposits and the ordinary useful mineral substances, and surface Geology applied to engineering and agriculture. This course extends over one semester, with supplementary work in Laboratory.

Text-book: Williams' Applied Geology.

As often as practicable the rich mineral resources of Missouri will be discussed and its geology referred to.

The B. S. students during the second semester of the Senior year will devote a large portion of their time to the study of Palæontology and determination of fossils, and will occasionally have practice in Field Geology. The course in Palæontology will be mainly by lectures and the study of fossils.

To students who elect to take a special course, opportunity for field work will be given during both semesters.

PHYSICAL GEOGRAPHY.

The course in Physical Geography is illustrated by charts, lantern projections and specimens. It is an elementary course in Geology, and students in Geology are required to take it.

Text-book: Appleton's Physical Geography.

GEOLOGY AND PALÆONTOLOGY.

The instruction in this department is by lectures, charts, lantern projections and specimens. For admission to the class students are required to have completed the course in Physical Geography and Zoology and have studied Chemistry, and the B. S. students in addition are required to have completed the course in Mineralogy and Lithology.

Text-book: "Le Conte's Elements of Geology."

The geology of Missouri will be often discussed and its peculiar structure fully explained.

APPARATUS AND FACILITIES.

A lapidary's saw and grinding wheel for cutting and polishing specimens.

There are tables in the Laboratory arranged so that twenty-six students can easily work, and there are also twenty-five blowpipes belonging to the department. There is also one lithological microscope, a lantern and numerous slides.

The collection of rocks, fossils, ores, minerals and specimens of building stones is very large.

The total number of students in the Department of Geology and Mineralogy for session of 1889-1890 was :

Physical Geography.....	62
Engineering (Practical Geology).....	11
Agricultural (Economic Geology and Soils)	3
Academic	30
S. B. students (Geol. and Pal.).....	4
Mineralogy—regular.....	10
" special.....	1
" elective.....	2
Total number in Department.....	123

ELECTIVE COURSE IN MINERALOGY.

JUNIOR YEAR.

First Semester—

Crystallography (5), 7 weeks.

Laboratory (2), each week.

Mineralogy—General and descriptive (5), 10 weeks.

Laboratory (2).

Second Semester—

Lithology (5), 6 weeks.

Laboratory (2).

Ores, Mines and Mining (5), 10 weeks.

Laboratory (2).

SYLLABUS OF ELECTIVE COURSE IN MINERALOGY.

JUNIOR YEAR.

First Semester—

I. Physical Mineralogy (5), 7 weeks.

1. Crystallography (5).

2. Physical properties of minerals, 2 weeks.

The lectures on Crystallography embrace a thorough discussion of the six systems of crystallization, setting forth the various forms, both simple and compound, under which the more common crystals occur; showing the constancy of angle in crystals belonging to the same species; the difference of angle in different species; symmetry in position of planes; also a discussion of the mathematical relation of crystal faces, with methods for determination of same, both by mathematical measurement and calculation, and by zones; compound or twin crystals, twining axis and twining plane; paragenic and metagenic twins; contact and penetration twins.

Irregularities of crystals will include:

(a) Imperfections of surface—drusy surfaces, striated surfaces, curved surfaces, etc.

(b) Variations of form and dimensions which produce misleading distortions.

(c) Variations in angles produced by circumstances of heat and pressure, or by the presence of impurities at the time of crystallization.

(d) Internal imperfections and impurities—coloring matter, solid and fluid inclusions; crystals considered with reference to aggregation; distinguished as variably columnar, lamellar or granular; imitative shapes in crystals, as uniform, batryoidal, mammillary, globular, etc., are shown.

Pseudomorphism among crystals discussed and illustrated; pseudomorphs by substitution, by alteration and by deposition studied.

2. The physical characters of minerals discussed are those relating to:

(a) Cohesion and elasticity, as: cleavage, fracture, hardness and tenacity.

(b) Mass and volume, as specific gravity, etc.

(c) Light—the optical properties of crystals, color, luster etc.

(d) Heat.

(e) Electricity and magnetism.

(f) Action on the senses, as taste, odor, feel, etc.

II. Laboratory, from 2 to 5 p. m., Wednesdays and Fridays, during the seven weeks of Phys. Mineralogy, the work consisting in preparing from some soft ma-

terial models of all the more common crystal forms, while the lectures on Crystallography last; and as supplementary to the lectures on the physical properties of minerals, the laboratory work will be preparation of transparent slides for microscopic work and microscopic study of these and numerous other sections. Students will also become familiar with the various processes for determining H., G., tenacity, etc., of minerals. Some work will be done in optical determination of minerals.

III. Descriptive and Determinative Mineralogy (5), 10 weeks.

The lectures on Descriptive Mineralogy will cover those minerals that are important:

- (a) In rock-making.
- (b) As ores of useful metals.
- (c) As constituting gems.
- (d) On account of their economic value.

IV. Determinative Mineralogy (Laboratory), from 2 to 5 p. m., Wednesdays and Fridays, for the ten weeks covering Descriptive and Determinative Mineralogy. Students, while getting a taste of determinative in course III, will continue the work to determination of unknown minerals and species.

Second Semester—

V. Lithology (5), 8 weeks.

Lectures in this course consist in a general description and classification of rocks, their origin, their history and their economic uses. A few lectures are devoted to Missouri rocks especially.

VI. Laboratory—From 2 to 5 p. m., Wednesdays and Fridays, during the eight weeks occupied by course V. The work will be practical determination of rocks, both macroscopically and microscopically, and for the latter work students will be required largely to prepare their own material in the way of thin sections, etc. Ample apparatus for such work is now in the department.

Students will also make determinations of rocks by separating them into their constituent mineral elements and determining these elements separately.

VII. Ores, Mines and Mining (5), 8 weeks.

This course of lectures, designed especially for those who have in view mine engineering as a profession, embraces all the more important ores of the base as well as the precious metals. Special lectures upon Missouri ores.

VIII. Laboratory from 2 to 5 p. m. Wednesdays and Fridays during course VIII. This work is a continuation of course VI, supplemented by a few assays of Missouri ores.

ELECTIVE COURSE IN GEOLOGY.

SENIOR YEAR.

First Semester—

Physiographic and Lithological Geology (5), 1 week.

Dynamical and Structural Geology (5), 5 weeks.

Occasional geological excursions.

Applied (Economic) Geology (5), 9 weeks.

Missouri ores (5), 2 weeks.

Additional special laboratory work (2).*

*N. B.—Two hours as put here means the equivalent of two recitations, and is really five hours in laboratory.

Suitable fees will be charged for use of material and apparatus.

Second Semester—

Historical Geology and Palæontology (5), to end of April, with two additional hours in laboratory, and occasional field work.

SYLLABUS OF ELECTIVE COURSE IN GEOLOGY.

Physiographic Geology will include discussion of form and feature of the earth; its physical changes due to atmospheric agents, to aqueous agents and to temperature. Trend of mountain ranges; effect of erosion, transportation of sediments, distribution of forests and fomial regions.

Lithological Geology, definition of minerals, of rocks, whether organic or inorganic; rock-forming minerals, classification of rocks, sedimentary rocks, crystalline rocks, igneous rocks, volcanic, plutonic, metamorphic rocks illustrated by specimens.

DYNAMICAL GEOLOGY.

Glaciers, icebergs, limit of drift in United States. Chemical agencies of water, including springs, mineral springs, formation of caves, deposits in springs whether of lime, silica, iron oxide. Deposits in lakes, how salt lakes are formed; alkaline lakes; organic agencies; formation of peat, of coal, of bog iron, corals and coral reefs; geographical distribution of organisms, volcanoes, geysers, theories concerning earthquakes; elevation and depression of earth's surface.

Hyorothermal fusion, formation of crystalline rocks, anthracite coal.

Structural Geology—General formation of earth; its crust. density. The earth a solid mass; laws of continental form; stratified rocks defined and classified, are consolidated sediments; their first and present position; folds, fractures, faults, dip, strike, axes, conformity of strata, cleavage structure, concutionary structure.

Igneous Rocks—classification of. Plutonic rocks, granite, trap rocks, eruptive rocks, acidic and basic rocks, types of each mode of occurrence of igneous rocks; dikes, lava sheets, remarkable ancient lava flows, laccolitis; origin of igneous rocks, metamorphic rocks, theory of their formation, local metamorphism, general metamorphism.

Structures common to all rocks, fissures, joints, faults, law of slip.

Mineral veins, different kinds of, how formed, theories of accumulation of ores, the gangue, the veinstuff.

Economic Geology—Substances used in the arts; clays for brick, potter's clay, paintstuff, building stones, road material, limes, cements, useful metals, mineral, fuels, etc.

Classification of soils, how soils are formed and reclaimed, fertilizers, mineral fertilizers, water supplies.

Missouri ores, what they are and where found; their geological position and distribution and their related minerals, glass, sand, etc.

HISTORICAL GEOLOGY AND PALEONTOLOGY.

General classification of strata; ditto of Missouri rocks, their character and distribution; principles of palæontology, definition of fossils and their uses; classification of plants and animals as adapted to fossil organic remains; description of chief palæozoic forms of life, their advent, culmination, decline or extinction; fucoids, aerogens, carboniferous flora and formation of coal; distribution and area of coal fields; animal life, protozoa, coelenterata, corals, echinodermata, crinoidea, crustacea, brachiopoda, lamillabbranchiata, cephalopoda, etc., vertebrate fauna,

various types, entrance, culmination, decline; the life of each geological period described, age of various mountain systems, how and when formed; Appalachian system Alpine system, Ozark uplift.

The whole is supplemented by occasional lectures and notes of new discoveries, with occasional stereopticon views, and when weather is suitable, by geological excursions in the neighborhood.

XII. SCHOOL OF BIOLOGY.

Professor PURINTON.

A. BOTANY.

Professor PURINTON--W. R. DODSON, Assistant.

In the course in Science, Botany occupies three and one-half semesters. Descriptive Botany is studied during the second semester, the work being designed and arranged especially with a view to cultivating the powers of close observation and accurate description of natural objects. Attention is given to plants as well as to the text-book, and each student is required to observe for himself their form, habits, actions and the arrangement of their parts, and to compare them carefully with each other. Text-book, Gray's School and Field Book of Botany.

After students have acquired an elementary knowledge of chemistry and other branches of Science, the study of Systematic and Economic Botany is taken up in the second semester of the Junior year. The work of this semester consists principally in studying the characteristics of the different orders of plants, their relations to each other, and the leading facts in plant anatomy and physiology. The instruction is given by lectures, supplemented by means of living plants from the University green-house, objects from the herbarium and museum, and charts, drawings, photographs and lantern projections prepared in the department.

Plants are studied with especial reference to their economic relations, and their value in the arts and manufactures.

The last part of the semester is given to the analysis and classification of plants, with the use of Gray's Manual, and to the preparation of herbaria by the class, illustrative of the work done.

During the Senior year the students spend the afternoons of Friday and Saturday of the first semester in the Botanical Laboratory.

A large part of the work in the laboratory consists in the study of the minute structure of plants, Vegetable Histology and Cryptogamic Botany by the use of compound microscopes, with which the laboratory is supplied. The student here learns the use of the instruments, makes microscopic measurements and permanent mounts, and does original and independent work.

To cover the expense of material used in the laboratory, a fee of three dollars is charged on enrollment.

In the Medical school a half semester is devoted to Medical Botany, and in the course in Agriculture special attention is given to the study of rusts, smuts, mildews, the microscopic fungi, and plant diseases in general.

In the Engineering course about one-third of a term is given to the study of the uses, strength and durability of the different timber-producing plants.

Post-graduate students in this department will find ample opportunities for special work.

Instruction in Entomology is given by a course of lectures, for which the collection of insects in the department affords a valuable means of illustration.

Especial prominence is given to the life history and habits of insects injurious to vegetation, and the methods of successfully checking their ravages.

In addition to the above required course, the following are presented to the choice of the student :

ELECTIVES IN BOTANY.

Year.	Course.	Term.		Hours per week.
Senior.	A. B.	2	Cryptogamic Botany, or Vegetable Histology and Practical Exercises.	
	L. B.	2	Cryptogamic Botany, or Vegetable Histology and Practical Exercises.	3
	S. B.	2	Cryptogamic Botany, or Vegetable Histology and Practical Exercises.	3
Junior.	A. B.	2	Structural and Physiologic Botany.	3
	L. B.	2	Structural and Physiologic Botany.	3
	S. B.	2	Structural Botany.	1

Students from other approved schools presenting satisfactory evidence that they have thoroughly completed Gray's School and Field Book of Botany, and classified correctly and mounted twenty-five plants, will be admitted to the class in Economic and Systematic Botany without examination.

B. ZOOLOGY.

Professor PURINTON—W. R. DODSON, Assistant.

During the first semester of the first year there is a course of instruction in Elementary Zoology upon two days in the week. As this class is large there are two sections. Text-books, Packard's Briefer Course in Zoology, and Colton's Practical Zoology.

During the fifth semester Dr. Moss of the Medical school gives a course of lectures in Human Anatomy, Physiology and Hygiene.

During the first semester of the Junior year there is a course of lectures in Vertebrate and Invertebrate Zoology, embracing descriptive and comparative Anatomy and Physiology of the classes and orders of the animal kingdom. For ad-

mission to this class the students are required to have completed the courses in Human Anatomy and Physiology and Elementary Zoology. Reference book, Packard's Hand-book of Zoology.

Students in Zoology are required to spend one afternoon of each week for one semester in the Zoological Laboratory. The course in Laboratory practice for the first-year students embraces Invertebrate and Vertebrate dissections. Reference book, Colton's Practical Zoology.

The Laboratory course for students of the advanced class will consist of vertebrate dissections, injecting of tissues and studies in the minute anatomy of animal forms with the microscope. The laboratory fee for each student in Elementary Zoology is *one dollar*, to be paid upon entering the class. The Laboratory is supplied with microscopes and accessories for work in Histology.

The advanced students in Zoology are required to pay a fee of *two dollars*, and also make a deposit of *eight dollars* for each semester, which will be returned, less breakage or damage done by the student, at the end of the year. All deposits and fees must be made at the beginning of the semester.

ELECTIVES IN ZOOLOGY.

Year.	Course.	Term.		Hours per week.
Senior.	A. B.	1	Biological Laboratory.	2
	L. B.	1	Biological Laboratory.	2
	S. B.	1	Embryology.	1
Junior.	L. B.	1	Embryology.	1
	S. B.	1	Embryology, 1. Zoological Laboratory, 2.	3
	S. B.	2	Ornithology, or Osteology, with practical exercises.	5

The number of students in Biology during the session of 1889-90 was 210.

Students having satisfactorily completed the above course in Elementary Zoology in other approved schools are, upon the presentation of the proper evidence to that effect, admitted to the Advanced class without examination.

No. of elective students in Biology for the year, 30.

THE MUSEUM.

Professor BROADHEAD and Professor PURINTON, Curators.

The new Museum occupies the north half of the new west wing of the Main building. Its inside dimensions are 45 by 70 feet, and consist of the ground floor and four galleries—making one large and magnificent room. It is 59 feet high, well lighted by ten windows on each floor, and a large sky-light reaching the length of the well. It has a capacity for 950 longitudinal feet of upright cases, 480 feet o

continuous table cases around the well, forming the balustrade, and 600 square feet of other flat cases, besides the space in the center of the ground floor. Attached to the Museum are suitable lecture and work rooms and laboratories.

The present collection, although embracing many and costly specimens, is entirely inadequate to the needs of the Department, and should be largely supplemented by the addition of other animal forms from our own and foreign countries.

In the selections of the specimens already obtained, the primary object has been their value in teaching Systematic and Structural Zoology, and Comparative Anatomy. Out of so many interesting forms attention might be called to a group of gorillas—which approach so nearly to the form of man—and to the skeleton and stuffed skin of “Emperor,” one of the largest of the Indian elephants.

It is especially desirable that a complete classified collection of the insectivorous and other birds of Missouri and of the injurious and beneficial insects of the State be made, and this the professor in charge and his assistant propose to do, if a sufficient sum for this purpose and to provide the necessary cases for their protection shall be appropriated.

Another imperative need is suitable heating facilities for the Museum, that it may be available for class use, and for the inspection of visitors during the whole year, which is now impossible in the winter months.

The professor in charge has already added a considerable number of stuffed and mounted specimens (the result of his own work in Taxidermy) at a comparatively nominal expenditure, which, in the market, would cost several hundred dollars. He proposes, in like manner, to largely increase the collections, should suitable facilities be provided by the proper authorities.

A large number of superior lantern slides for use in several of the schools of the University have been prepared in the Department during the past year, and serve as a very valuable means of illustration in the several departments where they are in use.

LADIES' DEPARTMENT.

Mrs. J. P. ROYALL, Principal.

By an act of the Legislature, in 1872, the doors of the Missouri State University were opened to ladies, thus affording to the young women of our land educational advantages equal to those provided for the young men. Five years previous to the admission of ladies to all departments of the University, they had been admitted to the Normal department. Even such limited advantages were highly appreciated, and the number of young women attending the University increased year by year, until the growing need of larger and more liberal provision became apparent. The Curators of the University, readily recognizing the importance of the higher education of women, had only to suggest the matter to the State to find a willing and ready co-operation in the plan of placing within the reach of the young women the same educational advantages furnished to the young men of the State. To this provision was added that of a lady principal, in which capacity Mrs. O. A. Carr served from 1879 to 1887, since which time I have had the honor to reside over the department. The position is one of great responsibility, and one

which could easily be rendered burdensome beyond expression. But I am gratified to state that the cheerful conformity of the young ladies to all the rules pertaining to their special department, together with their uniform kindness and consideration, has made our association a pleasure and not a burden. As a rule, they have been quiet and lady-like in their demeanor, bearing themselves with a modesty and dignity which should be an encouraging evidence to the State of the great benefit bestowed upon the country in the impetus thus given to the development of genuine womanhood.

UNIFORM.

It is desirable, for many reasons, that the dress of the young women be simple and inexpensive. Simplicity in dress, right in itself, is peculiarly becoming in a student, for it saves time, money and thought to be consecrated to higher uses. It is desirable also that the young women identified with the University be distinguished from all others, and that distinction in the class-room between the rich and the poor be avoided. By the adoption of a uniform this can be readily and effectively accomplished. Therefore, to avoid extravagance on the part of some and embarrassment on the part of others, and to disarm criticism, all young ladies attending the University are required to adopt, as their daily attire (the weekly and special holidays excepted), the following uniform: A walking suit of black woollen goods, with trimmings of the same color. During the first month of the first semester and the last month of the second semester, a white waist or basque may be substituted for the black waist or basque. The shape and material of the hat are determined by the taste of the wearer; the color and trimmings must be uniformly black.

The trimmings must be characterized by simplicity, and all flowers, feathers and ornaments are excluded from the uniform hat.

Each young woman must be provided with a water-proof cloak, with an umbrella and with rubber overshoes. In winters of this climate, it is imperative that our lady students take every necessary precaution toward the preservation of their health.

The above regulation dress is prescribed by the Faculty, and made a condition of admission or continuance in the institution, under the special authorization of the Board of Curators, and a penalty of ten demerits is entered for each day's violation of this rule; and it will be borne in mind that 100 demerits exclude the student from the institution, and 25 debar from all public appearance in the Literary Society exhibitions or contests.

LITERARY SOCIETY.

The young women have one literary society, the Philalethean. The young ladies of the more advanced classes have a larger representation in the Philalethean Society this year than ever before in its history; and the exercises of its last open session, especially the original exercises—the addresses, orations and essays—were pronounced by competent judges as very creditable.

Through the late magnificent additions made to our University, the Philalethean Society was provided with a larger and more convenient hall. Their hall can be lighted by either gas or electricity, is carpeted and handsomely but inexpensively furnished, and is one of the most commendable for good taste in the State. These generous provisions have very naturally stimulated the girls to greater interest in society work, and their membership is steadily on the increase.

The young ladies are provided also with a neatly furnished study hall communicating with the lady principal's private room, and also with convenient dressing room and cloak room. These rooms all lie together on the first floor of the east wing, and make a genteel and admirable suite for the convenience and comfort of the young ladies. They have free access to the Library, also, as a Study hall.

SCHEME OF ACADEMIC STUDIES.

In the two Preparatory years more especial stress is laid upon English and Mathematics as the common basis of all higher education. Scarcely less importance is assigned to the Doctrine of Scientific Description represented by Physiology, Botany, Physical Geography, Physics.

The Freshman year offers the student a choice of one of three curricula—the Classical leading by steady pursuit of Latin and Greek to the degree of A. B.; the Literary through English, French and German to the degree of L. B.; the Scientific to that of S. B. (Artium, Literarum, Scientiarum—Baccalaureus-a.) The collateral studies are throughout carefully arranged to secure breadth of thought and variety of discipline, while the common elements, especially in English and Mathematics, are trusted to conserve a needed sympathy among the educated as well as a general solidarity of culture.

On arriving at the Junior year the student must choose some one line of study for more especial prosecution; this choice will be expressed in the option of electives, and there are three rules for its guidance:

1. Election each semester must be made from among the electives offered in that semester.
2. In all four semesters at least one subject must be elected from the same school—the other subjects remaining at will.
3. Electives are open to Juniors and Seniors only, except by special Faculty dispensation.

The first rule may suffer two exceptions:

- a. Classical Seniors may elect either French or German, but not both.
- b. Scientific Seniors may elect either Greek or Latin, but not both.

It is thought that the scheme presented, while not in any case unduly narrowing the range of intellectual attainment or sympathy, will make sure a high degree of thoroughness in elect branches.

PREPARATORY COURSES—CONDITIONS OF ADMISSION.

The full course of study pursued at the University as preparatory to the Freshman class is outlined below. But proficiency in the subjects marked thus † will not be demanded of candidates for that class who have studied elsewhere; also, in case of students entering upon the course in Science, leading to the degree of S. B., a full year's study of Ancient and Mediæval History may be accepted as a substitute for the prescribed year of Latin.

This schedule of sub-Freshman work has been arranged and adopted in the belief that it is quite within the capacity of the majority of High Schools and Academies in the State. If any such Seminary shall so far conform its own curriculum

REVISED SCHEDULE OF UNIVERSITY CURRICULA.

	SENIOR.		JUNIOR.		SOPHOMORE.		FRESHMAN.	
	First Term.	Second Term.	First Term.	Second Term.	First Term.	Second Term.	First Term.	Second Term.
	<i>Classical (A. B.)</i>		<i>Literary (L. B.)</i>		<i>Scientific (S. B.)</i>			
	IV. Greek.....	2	Ia. French.....	3	I. Metaphysics.....	5		
	I. Metaphysics.....	5	I. Metaphysics.....	5	V. Astronomy.....	3		
	V. Astronomy.....	3	V. Astronomy.....	3	III. Geology.....	2		
	Elective.....	10	III. English Philology.....	2	Elective.....	10		
			Elective.....	7				
	III. Latin.....	2	Ia. French.....	3	I. Metaphysics.....	5		
	IV. Greek.....	3	I. Metaphysics.....	5	II. Geology.....	4		
	I. Metaphysics.....	5	II. Geology.....	4	V. Biology.....	2		
	II. Geology.....	4			Chem. Lab.....	2		
	IV. Compar. Philology.....	2	Elective.....	8	Elective.....	7		
	Elective.....	4						
	III. Latin.....	3	IV. French.....	4	Physical Laboratory..	2		
	Ia. Greek.....	4	III. Greek.....	5	II. Botany.....	4		
	II. English.....	3	II. English.....	3	III. Mechanics.....	3		
	V. Compar. Philology.....	2	I. Botany.....	2	IV. Mineralogy.....	4		
	I. Botany.....	2	Elective.....	4	Elective.....	7		
	Elective.....	6						
	III. Latin.....	4	IV. French.....	4	III. Chem. Theory.....	3		
	Ia. Greek.....	5	III. Greek.....	5	IV. Phys. Theory.....	4		
	II. English.....	3	II. English.....	3	II. English.....	3		
	I. Zoology.....	4	I. Zoology.....	4	I. Zoology.....	4		
	Elective.....	4	Elective.....	5	III. Mechanics.....	2		
					Elective.....	4		
	IV. Latin.....	5	IV. Latin.....	5	Ia. French.....	3		
	II. Greek.....	5	II. German.....	5	II. German.....	5		
	III. English.....	3	III. English.....	3	III. English.....	3		
	VI. Anal. Geometry.....	4	VI. Anal. Geometry.....	4	VI. Anal. Geometry and			
	I. Sociology.....	2	I. Sociology.....	2	Determinants.....	5		
					I. Sociology.....	2		
	V-VII. Chem. Laboratory. 1		V-VII. Chem. Laboratory. 1		V-VII. Chem. Lab.....	2		
	IV. Latin.....	5	IV. Latin.....	5	Ia. French.....	3		
	II. Greek.....	5	II. German.....	5	II. German.....	5		
	III. English.....	5	III. English.....	5	III. English.....	5		
	VI. Anal. Geometry.....	2	VI. Anal. Geometry.....	2	VI. Anal. Geometry and			
	I. Political Economy.....	2	I. Political Economy.....	2	Determinants.....	3		
					I. Political Economy.....	2		
	V-VII. Phys. Laboratory. 1		V-VII. Phys. Laboratory. 1		V-VII. Phys. Lab.....	2		
	I. Latin.....	5	I. Latin.....	5	IV. French.....	5		
	III. Greek.....	5	VI. German.....	5	VI. German.....	5		
	II. Physics.....	5	II. Physics.....	5	II. Physics.....	5		
	IV. Composit'n and Rhetoric.....	2	IV. Composit'n and Rhetoric.....	2	V. Geometry, Trigonometry and Algebra.....	5		
	V. Geometry and Trigonometry.....	3	V. Geometry and Trigonometry.....	3				
	I. Latin.....	5	I. Latin.....	5	IV. French.....	3		
	III. Greek.....	5	VI. German.....	5	VI. German.....	5		
	II. Chemistry.....	5	II. Chemistry.....	5	II. Chemistry.....	5		
	IV. Composit'n and Rhetoric.....	2	IV. Composit'n and Rhetoric.....	2	IV. Composition and Rhetoric.....	2		
	V. Geometry and Trigonometry.....	3	V. Geometry and Trigonometry.....	3	V. Geometry, Trigonometry and Algebra.....	5		

NOTE.—The Roman numerals denote the hour at which the class recites; the Arabic numerals denote the number of times per week. See the following table.

SYNOPSIS OF COURSES PRESCRIBED FOR THE ACADEMIC DEGREES: A. B., L. B., S. B.

SCHOOL.	FRESHMAN.				SOPHOMORE.				JUNIOR.				SENIOR.			
	Semester I.		Semester II.		Semester I.		Semester II.		Semester I.		Semester II.		Semester I.		Semester II.	
	Per week.		Per week.		Per week.		Per week.		Per week.		Per week.		Per week.		Per week.	
	Hour	A. L. S.	Hour	A. L. S.	Hour	A. L. S.	Hour	A. L. S.	Hour	A. L. S.	Hour	A. L. S.	Hour	A. L. S.	Hour	A. L. S.
I Physics.....	II	5	5	5	V	10	VII	1	1	2	III	2	III	2	III	2
II. Chemistry.....	II	5	5	5	VII	1	VII	1	1	2	III	1	III	1	III	1
III. { Geology.....																
IV. { Mineralogy.....																
IV. Biology.....																
Botany.....																
Zoology.....																
V. { Mathematics.....	V	3	3	5	V	3	VI	4	4	5	I	4	4	4	III	2
VI. Astronomy.....																
VII. Metaphysics.....																
VIII. English.....	IV	2	2	1	IV	2	III	3	3	3	II	3	II	3	I	5
VIII. Modern Languages—																
French.....	IV	4	4	4	Ia	3	Ia	3	4	4	IV	4	Ia	3	Ia	3
German.....	VI	5	5	5	II	5	IV	5	5	5	III	3	III	2	III	2
IX. Latin.....	I	5	5	5	I	5	IV	5	5	5	III	3	III	2	III	2
X. Greek.....	III	5	5	5	II	5	II	5	5	5	Ia	5	IV	3	IV	2
Elective.....																
Total.....	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20

EXPLANATION.—The Roman numerals refer to the hour of class-meeting, beginning at 9 a. m. and intermitting 1-2 p. m. ; Ia, however, meaning 7-30 a. m. ; the Arabic to the class-meetings per week; the Initials to the courses in Arts, Letters, Science. The prescribed work in any school is found in the horizontal row opposite; that in any semester, in the vertical column beneath.

* Mechanics. † Political Economy. ‡ Sociology. || Comparative Philology.

hereto as to embrace therein the full equivalent in kind and in amount (the obelized subjects excepted, as already stated,) of the instruction given at the University as preparatory to the Freshman class, and shall satisfy the Academic Faculty of that state of facts, such Seminary, upon application to the University authorities, shall be enrolled and mentioned as "Approved" in the University catalogue, and its certificate shall admit the bearer to the Freshman class without examination.

Inasmuch as the Academic Faculty would gladly advance at the earliest practicable date the requirements for admission to the Freshman class, as well as remit the entire sub-Freshman work, it is respectfully recommended that High Schools and Academies include as much Latin and introduce as much Physics and Chemistry within their curricula as possible. Furthermore, since it is not disputed that the hearty sympathy and mutual support of High School and University are indispensable to the furthest advancement of their interests both common and peculiar, it is earnestly requested that they co-operate toward this unification of the educational system of the State.

PREPARATORY COURSE.

Hour.	FIRST YEAR— <i>First Semester.</i>	No. times per week.
I.	English Grammar	5
II.	Mathematics, Algebra and Geometry	5
IV.	Physiology and Hygiene.....	4
III.	Civil Government.....	3
VII.	Military Science†	3
<i>Second Semester.</i>		
III.	English (Elementary Rhetoric)	5
I.	Mathematics (Algebra and Geometry).....	5
II.	Botany	2
II.	Modern History	2
VII.	Military Science†	3
—.	Book-keeping†.....	3

Hour.	SECOND YEAR— <i>First Semester.</i>	No. times per week.
VI.	English (Advanced Grammar)	4
IV.	Mathematics (Algebra and Geometry).....	5
II.	Latin	5
III.	Physics†.....	4
V.	Zoology.....	2
<i>Second Semester.</i>		
VI.	English, U. S. History and American Literature	5
IV.	Mathematics (Algebra and Geometry)	5
II.	Latin	5
III.	Physical Geography	5

LIST OF APPROVED SCHOOLS.

The following schools have been approved, and their certificate will admit the bearer to the Freshman class without examination:

Name of school.	Location.
Bethany High School.....	Bethany.....
Cooper Institute.....	Boonville.....
Craig High School.....	Craig.....
Hannibal High School.....	Hannibal.....
Higginsville High School.....	Higginsville.....
Hooper Institute.....	Clarksburg.....
Independence High School.....	Independence.....
Joplin High School.....	Joplin.....
Kemper Family School.....	Boonville.....
Macon High School.....	Macon.....
Marshall High School.....	Marshall.....
Maryville High School.....	Maryville.....
Mexico High School.....	Mexico.....
Mound City High School.....	Mound City.....
Mountain Grove Academy.....	Mountain Grove.....
Neosho High School.....	Neosho.....
Nevada High School.....	Nevada.....
Richmond High School.....	Richmond.....
Salem High School.....	Salem.....
Sedalia High School.....	Sedalia.....
St. Joseph High School.....	St. Joseph.....
St. Louis High School.....	St. Louis.....
Wentworth Academy.....	Lexington.....

II. THE PROFESSIONAL SCHOOLS

OF THE

MISSOURI UNIVERSITY.

- XIII.—1. Agriculture—Agricultural and Mechanical School.
 - XIV.—2. Pedagogics—Normal School.
 - XV.—3. Law School.
 - XVI.—4. Medical School.
 - XVII.—5. School of Mining and Metallurgy.
 - XVIII.—6. Engineering School.
 - XIX.—7. School of Military Science and Tactics.
 - XX.—8. School of Art.
 - XXI.—9. Commercial School.
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XIII. AGRICULTURAL AND MECHANICAL SCHOOL.

FACULTY.

M. M. FISHER, D. D., LL. D.,
Chairman of the Faculty and Professor of Latin Language and Literature.

EDWARD D. PORTER, M. A., PH. D.,
Professor of Agriculture and Director of Experiment Station.

PAUL SCHWEITZER, PH. D.,
Professor of Chemistry and in charge of Chemical work of the Experiment Station.

THOMAS JEFFERSON LOWRY, S. M., C. E.,
Professor of Surveying.

PAUL PAQUIN, M. D., V. S.,
*Professor of Comparative Medicine and Veterinary Science, and Director of Pathological
 Laboratory.*

EDWARD A. ALLEN, A. M.,
Professor of English.

WM. B. SMITH, PH. D.,
Professor of Mathematics.

GEORGE D. PURINTON, A. M., PH. D.,
Professor of Botany and Entomology.

J. W. CLARK, B. S.,
*Professor of Horticulture and in charge of the Horticultural Department of the Experiment
 Station.*

M. L. LIPSCOMB, M. A.,
Professor of Physics.

A. C. VANDIVER,
Farm Superintendent.

ASSISTANTS OF THE EXPERIMENT STATION.

PAUL EVANS,
Assistant Veterinarian.

H. J. WATERS,
Assistant Agriculturist.

B. VON HERFF,
Assistant Chemist.

IRVIN SWITZLER,
Secretary.

TERMS OF ADMISSION.

Candidates for admission must pass satisfactory examinations in arithmetic, and in geography and elements of English grammar.

Candidates for advanced standing must pass examinations in those studies that have been pursued by the class which they propose to enter. This can be learned from the course laid down in the following table.

LECTURES IN AGRICULTURE.

Instruction in agriculture is given mainly by lectures, text-books being used in connection with the lectures when they are available. These lectures cover the history and development of agriculture through early, mediæval and modern times; the location, construction and sanitary condition of farm buildings; farm fences and implements; drainage; tillage; soils, their origin, composition, physical properties, and how to improve them; plant nutrition, or fertilizing the soil both by yard manure and chemicals; farm crops, their history, improvement by breeding and selection, their cultivation, harvesting and preservation; veterinary science; farm law; stock feeding, covering the laws of animal nutrition and the art of feeding; dairying, its art and science; in brief, the field of general agriculture and horticulture is covered. As ours is a great stock State, especial attention is given to stock husbandry.

AGRICULTURAL CHEMISTRY.

General introduction; function of the plant, including production, conversion, transportation, deposition of organic matter; physiological structure of the cell; respiration; the green cell an apparatus for doing work dependent upon light and heat; nitrogenous constituents of the plant and their relation to free and combined nitrogen; mineral constituents; membraneous diffusion; assimilation; condition of vegetation.

Soil, its formation, composition, alteration by mechanical, chemical, biological agencies; its relation to light, heat, moisture.

Manures, natural and artificial; their composition, application, value.

HORTICULTURE.

The class-room instruction in horticulture is by lectures, supplemented by written abstracts and a discussion of the matter gone over.

The subjects treated are: Plants, their structure and the functions of the different organs, with the effect of different conditions of the atmosphere and soil on their development; propagation of plants, by seeds, cuttings, layers, buds, grafts, etc.; the nursery and its operations; forestry; fruit-growing; glass structures, their use, construction and management; market gardening; floriculture and landscape gardening.

Students are required to devote enough time to work on the horticultural grounds to familiarize themselves with the different operations, and if they desire to make a specialty of horticulture, an opportunity is offered of working there for wages during their spare hours.

Descriptive Botany is studied during the last half of the second semester of the junior year, the work being designed and arranged especially with a view to cultivating the powers of close observation and accurate description of natural objects. More attention is given to plants than to the text-book, and each student is required to observe for himself their form, habits, actions and the arrangement of their parts, and to compare them carefully with each other.

After students have acquired an elementary knowledge of chemistry and other branches of Natural Science, the study of Systematic and Economic Botany is taken up. The work of this semester consists principally in studying the characteristics of the different families of plants, their relations to each other, and the important plants of each. The instruction given is largely by lectures, which are supplemented by means of living plants from the green-house, and objects from the

Museum, which contains a large number of objects illustrative of the vegetable products in general use, together with their processes of manufacture. Special attention is given to the study of the structure, habits and development of the more common injurious fungi, and in this work the student is familiarized with the use of the compound microscope, and with the best methods of fighting these enemies of the farmer.

STUDIES IN VETERINARY SCIENCE.

Lectures are given on anatomy, physiology, principles of hygiene and the special pathology and treatment of most common and destructive diseases of domestic animals. The last lectures are on contagious diseases and their prevention. Several of the students of the Medical department (who are all at liberty to attend these lectures) manifested encouraging interest in this field of medicine.

This department of studies being new, the outlook is certainly very promising.

A State law makes the teacher of veterinary science State Veterinary Inspector, whose duties are to visit cases of contagious diseases occurring in the State. This brings him in contact with the troublesome maladies of our domestic animals, and fits him for the practical teaching of our youths.

In the winter students are every Thursday taken to witness operations upon and the treatment of the varied ailments of our various domestic animals, at the experimental laboratory.

Great interest has been manifested in these illustrations, and information of the greatest value is fixed thereby upon their minds.

VETERINARY MEDICAL FEATURES.

Laboratory.—A vaccine and experimental laboratory has been organized for the cultivation of vaccine virus and study of obscure diseases. This department of work is in charge of Dr Paul Paquin, who has visited France to study under the great masters of the science and art of the culture and use of these viruses.

It is confidently anticipated that great good will come to the State from the work proposed, and for the carrying on of which a suitable building has been equipped.

Comparative Medicine.—Arrangements have been made with the Medical School of the University, whereby a course of studies is laid out that is crowned with the degree of M. C. D. (Doctor of Comparative Medicine.) This object, however, cannot be attained yet for want of funds to organize a full faculty, and proper and sufficient hospital accommodations and dissecting room.

Human and comparative medicine rest upon the same broad principles of Anatomy, Physiology, Pathology and Therapeutics. Every farmer may in time have the services of an expert in animal medicine, and himself become better acquainted with the subject.

Human medicine is now acquiring vast stores of valuable data from the study of animal maladies. The acquisition of this compound information will be of great value to practitioners in our stock interests.

THE AGRICULTURAL COLLEGE COURSE, B. A. S.

SENIOR YEAR.

<i>First Semester.</i>		<i>Second Semester.</i>	
Latin or German.....	5	Mental and Moral Science and Logic...	5
Agriculture, 3 }	5	Geology, 3 }	5
Botany, 2 }	5	Chemistry, 2 }	5
Chemistry, 2 }	5	English Literature, 3 }	5
Horticulture, 2 }	5	or	
Drawing, 1 }	5	Veterinary Science, 3 }	5
Political Science.....	5	Latin or German.....	5

MIDDLE YEAR.

Agriculture, 3 }	5	Agriculture, 3 }	5
Botany, 2 }	5	Botany, 2 }	5
Algebra and Plane Geometry.....	5	Plane Trig. and Solid Geom. 4 }	5
Latin	} 5	Drawing, 1 }	5
or		Physics.....	5
Rhet. 3, Land. Gard. 1, Mil. Sc. 1 }	5	Latin	} .. 5
Zoology, 2 }	5	or	
Entomology, 1 }	5	Rhet. 2, U. S. Hist. and Am. Lit. 3 } ..	5
Physical Geography, 2 }	5		

JUNIOR YEAR.

Anatomy and Physiology, 3 }	5	Mathematics, 2 }	5
Horticulture, 2 }	5	Botany, 2 }	5
Agriculture, 2 }	5	Horticulture, 1 }	5
Drawing, 1 }	5	Agriculture, 2 }	5
Military Science, 2 }	5	Book-keeping, 2 }	5
Mathematics.....	5	Horticulture and Entomology, 1 }	5
English Composition.....	5	English Composition.....	5
		Military Science, 2 }	5
		Zoology, 3 }	5

Students will find in the above course *all subjects* required for admission to the Freshman classes of the University, and many more.

A SHORT COURSE FOR FARMERS.

It has been decided to form a special course in agriculture of one month's duration for the especial benefit of farmers, young or old, who feel a desire to gain the advantages that may be afforded by the specialists and the equipment of the Agricultural College.

This course will cover those specific fields of the science and art of agriculture that will have a direct business value to farmers. Fundamental principles of science in its relation to agriculture will be so far presented as to reveal the laws upon which certain operations of agriculture rest, while at the same time a discussion of the world's best methods, as gained by experience, will be required—the equipment of the college and its farm affording some aid in the work.

There will be lectures by the teachers of agriculture, by successful farmers, by the professors of Horticulture, Veterinary Science, Chemistry, Botany, and by others. These lectures will occur in winter.

Fuller particulars will be given in a special announcement at a later date.

DEGREES.

The degree of B. A. S. (Bachelor of Applied Science) will be conferred upon those who complete the course and pass the final examinations.

All students receiving a degree must prepare a thesis on some agricultural subject to be presented by the college.

EXPENSES.

The expense of the course is very moderate and within the means of any young man desiring to complete it. A detailed statement of expense will, from the index, be readily found elsewhere in this catalogue. From the following statements it will be seen that room rent is free and opportunity for work is provided for and required of the professional students of the Agricultural college.

Museums, Apparatus and Farm Library.—A valuable library of farm books has been collected, to which additions are being made. In addition to the Agricultural library, the students of the Agricultural college have access to the libraries of all the associated schools.

Agricultural Museum.—Large additions have been made to this Museum of objects especially adapted to illustrate the lectures in agriculture and agricultural botany. The World's Exposition at New Orleans was the source of much valuable matter. This Museum now contains an unusually fine collection of wool and of cotton fibres, numbering about 600 specimens. These fibres represent most all civilized sections of the world. The wool fibres include the various breeds of sheep, affording as a whole, opportunity to study the influence of climate, soil and breed on wool fibre. Various fibre-producing plants are well represented, and are often accompanied by their various manufactured products. Nearly all of the woods of the State are represented by three feet of the trunk of each tree, so prepared as to show its heart and sap in the rough and under polish. The grasses of the state are represented by 125 species, collected by a graduate of the Agricultural college. In addition to the grasses of the State, the Museum contains one of the finest general collections of grasses in the country. In seeds it contains ninety Japanese varieties, 150 species of American farm seeds, and a great number of varieties of wheat, corn, oats and barley. It has 170 different grades of the milling products of wheat. It contains several hundred models of farm machinery. Sorghum and all its varied products are represented by forty-six objects. A large collection of miscellaneous materials of great value that cannot be enumerated. This list contains many woods and their products from the states of this country and from South America and Europe; also a long list of plants and their products.

In addition to these means of illustration, 318 lantern slides have been already collected of the larger number intended. These are found to be a very great aid to the lecture room.

Chemical and Physical Laboratories.—Laboratories in each of these departments are well supplied with modern appliances for illustrating lecture-room teachings.

Club-Houses.—A group of club-houses on the farm will accommodate a large number of students, and are devoted to their free use to facilitate the instruction given in field work. It is desired that students avail themselves of rooms at the

club-house. The students of Agriculture will have the preference of rooms in the Agricultural boarding club buildings, which are situated on the Horticultural grounds, provided application be made before the opening of the First Semester, September 9, 1890; the charges will be paid the same as by other students, but to those students who continue their agricultural studies and course as prescribed, to the end of the year, the room rent will be refunded.

Green-house.—A green-house, which is connected with the Horticultural Department, affords invaluable assistance in connection with the botanical studies and for the improvement of plants.

Farm.—The farm is divided into two departments—Farm and Horticultural—both of which were well equipped with buildings, stock and tools of modern character. But owing to a disastrous fire last season, the barn, implements and machinery were totally destroyed. They have been partially replaced and it is hoped that necessary appropriations will be made by the next Legislature to thoroughly equip the farm for the best work. The former consists of 600 acres of land of varying quality, and is well adapted to its purpose of instruction and experiment work. The students will be required to perform such labor on the farm as is deemed necessary for the acquirement of proficiency in the methods taught, and will be compensated according to the character and amount of the work done, ten cents being the maximum pay per hour. In addition to this field labor, students will be required to perform farm labor whenever it is desirable to illustrate lecture-room teachings. Such work will be done without pay.

Experiments will be constantly carried on for the farming interests of the State and for lecture-room work. Students will be required to assist in the experiments.

The Horticultural department will stand in the same relation to the lecture room and to the public that the farm does. It is an indispensable aid in teaching the student small fruit culture, grafting, budding, pruning, hot-house propagation, vegetable gardening, etc.

The Horticultural department is provided with two green-houses—one 25x100 feet and the other 16x80 feet—and has also about 1,000 feet of hot-bed sash for propagating purposes. In the orchard and fruit garden are about eight hundred varieties of fruits, which are used in illustrating lecture-room work and for experimental purposes.

The United States Experiment station is located in connection with the college. Extensive experiments are always being carried forward, and afford an invaluable means of study of problems and the acquisition of habits of observation.

For the James S. Rollins scholarship to be awarded in the department, see page—.

XIV. NORMAL SCHOOL.

FACULTY.

M. M. FISHER, D. D., LL. D.,

Chairman of Faculty, Lecturer on Roman Education.

Professor of Pedagogics.

EDWARD A. ALLEN, LITT. D.,

Professor of English, Dean.

PAUL SCHWEITZER, PH. D.,

Professor of Chemistry.

A. F. FLEET, A. M., LL. D.,

Professor of Greek and Lecturer on Greek Education.

JAMES SHANNON BLACKWELL, PH. D.,

Professor of Modern Languages, and Lecturer on Oriental and Medieval Education.

Professor of Art.

WOODSON MOSS, M. D.,

Professor of Anatomy and Physiology.

JOHN P. ROYALL,

Instructor in Book-keeping.

GEORGE D. PURINTON, A. M., PH. D.,

Professor of Biology.

G. C. BROADHEAD, M. S.,

Professor of Geology and Mineralogy.

WM. B. SMITH, PH. D., (Göett.)

Professor of Mathematics.

M. L. LIPSCOMB, A. M.,

Professor of Physics.

DEGREES GRANTED BY THE NORMAL COLLEGE.

- I. Principal in Pedagogics (Pe. P.)
 II. Bachelor of Pedagogics (Pe. B.)

Students are graduated in two distinct Normal courses, one academic and the other elementary.

The Elementary Normal degree (Pe. P.) is conferred upon those students who complete the "Public School" Normal course, extending over two years, and arranged to meet the requirements of the school law of the State. Graduates in this course receive a certificate, which, according to the present law, "entitles the holder to teach the several branches of study named therein for a period of two years from the date of graduation."

COURSE OF STUDY FOR ELEMENTARY DEGREE.

	JUNIOR YEAR.	No. times per week.
First Semester...	English Grammar and Analysis (Third semester).....	5
	Algebra and Plane Geometry (Third semester).....	5
	Physiology and Hygiene.....	3
	Civil Government.....	2
	Zoology.....	2
Second Semester.	U. S. History.....	3
	American Literature.....	2
	Physical Geography.....	5
	Elementary Botany.....	2
	English Composition.....	5
	SENIOR YEAR.	
First Semester...	Chemistry.....	5
	English History.....	2
	English Literature.....	3
	Young Chemist.....	1
	Book-keeping.....	3
	Pedagogics.....	3
Second Semester.	English Literature.....	3
	Laboratory (Elective).....	5
	Elementary Physics.....	4
	Rhetoric.....	2
	Pedagogics.....	3

ACADEMIC NORMAL DEGREE (Pe. B.)

The higher degree, that of Bachelor of Pedagogics, is conferred upon regular graduates of the University in any one of the three academic courses who supplement their academic work by two semesters of Normal instruction. Graduates in this course receive a diploma, which is a permanent license to teach anywhere in this State.

ENROLLMENT.

Students in the Normal class.....	18
Candidates for graduation :	
Academic degree, Pe. B.....	2
Elementary degree, Pe. P.....	15

XV. LAW DEPARTMENT,
OF THE
UNIVERSITY OF THE STATE OF MISSOURI.

FACULTY.

M. M. FISHER, D. D., LL. D.,
Chairman of the Faculty.

ALEXANDER MARTIN, A. M., LL. B.,
Dean of the Law Department.

CHRISTOPHER G. TIEDEMAN, A. M., LL. B.,
Professor of Law. Special Lecturer.

JAMES A. YANTIS, LL. B.,
Profesor of Law. Special Lecturer.

PAUL SCHWEITZER, PH. D.,
Lecturer on Toxicology.

ANDREW W. MCALESTER, A. M., M. D.,
Lecturer on Medical Jurisprudence.

HON. JOHN HINTON, JUDGE OF PROBATE,
Lecturer on Probate Law and Practice.

HON. HENRY S. KELLEY, LL. D.,
Lecturer on Criminal Law.

HON. SEYMOUR D. THOMPSON, LL. D.,
Lecturer on Law of Corporations.

JAMES A. SEDDON, A. M., LL. B., EX-JUDGE OF CIRCUIT COURT OF CITY OF ST. LOUIS,
Lecturer on Commercial Law.

E. H. CROWDER, LL. B.,
Lecturer on International Law.

SENIOR CLASS.

Name.	Residence.
Allen, Charles K.....	Columbia, Mo.....
Banta, Wm. S.....	Clinton, Mo.....
Belden, Eugene H.....	Columbia, Mo.....
Rotts, Wm. W.....	Mexico, Mo.....
Chapman, Campbell.....	Kansas City, Mo.....
Coleman, Wm. P.....	Columbia, Mo.....
Corder, Leslie W.....	Waverly, Lafayette county, Mo.....
Edwards, Waller.....	Forestell, St. Charles county, Mo.....
Fisher, Sam'l B.....	Columbia, Mo.....
Galloway, Sam'l L.....	West Plains, Howell county, Mo.....
Gunter, Walker T.....	Trinidad, Colorado.....
Hale, Wm. B.....	Columbia, Mo.....
Hinton, Edward.....	Columbia, Mo.....
Howard, Sam'l A.....	Center, Ralls county, Mo.....
Howe, Alphonso.....	Southwest City, McDonald county, Mo..
Jones, David W.....	Prairie Home, Cooper county, Mo.....
Littick, Chas. O.....	Southwest City, McDonald county, Mo..
Littlefield, Edwin C.....	Lamonte, Pettis county, Mo.....
McLane, Ora J.....	Oak Ridge, Cape Girardeau county, Mo..
Mastin, Thos. A. J.....	Kansas City, Mo.....
Morrison, Albert G.....	Columbia, Mo.....
Munns, Horace G.....	Snohomish, Washington.....
Nakajima, Yasukuni.....	Tokio, Japan.....
Nicholas, James L.....	West Plains, Howell county, Mo.....
*Smith, Chas. W.....	Columbia, Mo.....
Tomlin, Morell.....	Green Ridge, Pettis county, Mo.....
Turner, Archie W.....	Columbia, Mo.....
Wade, Andrew F.....	Sturgeon, Boone county, Mo.....

*Deceased.

JUNIOR CLASS.

Name.	Residence.
Arnold, James D.....	Columbia, Mo.....
Babb, Wm. J.....	Carrollton, Mo.....
Biggs, George R.....	Curryville, Mo.....
Brown, John S.....	Edina, Knox county, Mo.....
Bruce, George W.....	Pleasant Hill, Cass county, Mo.....
Burk, James S.....	Huntsville, Randolph county, Mo.....
Cameron, John F.....	Hale, Carroll county, Mo.....
Crews, Paul N.....	Fayette, Mo.....
Daniel, John A.....	Sweet Springs, Saline county, Mo.....
Edwards, George L.....	Jefferson City, Mo.....
Denny, James H.....	Glasgow, Howard county Mo.....
Duncan, James B.....	Maryville, Nodaway county, Mo.....
Evans, Lindell P.....	Hallsville, Boone county, Mo.....
Gwinn, James.....	Sweet Springs, Saline county, Mo.....
Hall, Caswell B.....	Stockton, Cedar county, Mo.....
Harl, Chas. C.....	St. Joseph, Mo.....
Jennings, Wm. S.....	Mount Vernon, Lawrence county, Mo..
Kane, Dennis W.....	Carrollton, Mo.....
Keith, Chas. A.....	Mayview, Lafayette county, Mo.....
Kemp, George W.....	Salida, Colorado....
Littell, Wm. R.....	Fairfax, Mo.....
McCulloch, Rob't L.....	Boonville, Mo.....
Manns, Arnold.....	Clarksville, Pike county, Mo.....
Moore, Joseph L.....	Commerce, Mo.....
O'Mahony, Clarence.....	Columbia, Mo.....

JUNIOR CLASS—Continued.

Name.	Residence.
Parker, Warren A.....	Mexico, Mo.....
Pittman, Hubert N.....	Fayetteville, Ark.....
Puckett, Oscar	Mayview, Lafayette county, Mo.....
See, Geo. W.....	Montgomery City, Mo.....
Shull, Aytchmonde P.....	Platte River, Platte county, Mo.....
Sprecker, Wm. H.....	Arcadia, Kas.....
Sterling, J. Bowman.....	Leland, Miss.....
Terrill, Henry.....	Moberly, Mo.....
Trumbo, Chas. E.....	Purdin, Mo.....
Von Gremp, Christian.	Vienna, Mo.....
White, Edward.....	Sulphur Springs, Ark.....
Warden, Hubert P.....	Perry, Ralls county, Mo.....

SPECIAL STUDENTS.

Name.	Residence.
Hockaday, Rollins M.....	Columbia, Mo.....
Martin, Wm. A.....	St. Louis, Mo.....
Pollan, John R.....	Fort Smith, Ark.....
Wallace, David.....	New London, Ralls county, Mo.....

TERMS OF ADMISSION.

For admission to the Junior class, no examination is required; (but the student, if unknown to the Professor, must bring testimonials of good character.)

No one will be admitted to the Senior class as a candidate for a degree unless able to sustain an examination upon the studies of the Junior year. In exceptional cases, upon failure in one or two branches only, the examination as to those branches may be postponed to some period during the term.

Students who do not wish to take the full course, and who are not candidates for the degree of Bachelor of Laws, will be permitted to take an elective course, and pursue any branches whose recitations do not interfere with each other.

The full course is for the term of two years, and embraces the various branches given below. Instruction is given by daily examination upon the text-books, by lectures upon special titles, and by the exercises of a moot court.

The Junior class will be instructed in the following subjects:

Elementary Law, Criminal Law, Torts, Bailments and Contracts.

By Professor Yantis.

Law of Sales, Commercial Paper and Partnership.

By Professor Tiedeman.

Law of Domestic Relations.

By the Dean.

The Senior class will be instructed on the following subjects:

Law of Real Property, Constitutional law, Interpretation and Construction of Statutes.

By Professor Tiedeman.

Pleading and Practice, Equity Jurisprudence, Admiralty, Insurance, Law of Corporations, and International Law.

By the Dean.

Law of Evidence.

By Professor Yantis.

TEXT-BOOKS.

The text-books of the Junior year will be as follows :

Robinson's Elementary Law.

Bishop on Contracts.

Bishop on Non-contract Law.

Schouler on Domestic Relations.

Schouler on Bailments.

Tiedeman on Sales.

Pollock on Partnership.

Tiedeman on Commercial Paper.

Criminal law is taught in connection with Robinson's Elementary Law and the criminal code of Missouri.

The text-books of the Senior year will be as follows :

Tiedeman on Real Property.

Bispham's Equity Jurisprudence.

Greenleaf on Evidence, 1st Vol.

Boone on Corporations.

Cooley's Principles of Constitutional Law.

Woolsey's International Law.

May on Insurance.

Bliss on Code Pleading.

Desty on Shipping and Admiralty.

Desty on Federal Procedure.

The Law Faculty are more and more satisfied that the highest results cannot be reached by lectures alone or chiefly, however clear and thorough they may be, but that the student should, as far as possible, be required to study the text-books and be examined daily upon their subjects, accompanied by oral explanations by the teacher. In this way, and this only, can the subject be fixed in his mind, and by this only can be secured the formation of proper habits of study. The lecture has been combined with study, and, in subjects which for want of time and proper books cannot be otherwise taught, is chiefly relied on.

The studies of the course will compel ordinary students, although they enter with some preparation, to take the full two years' course. The Law Faculty have seen, with pain, the efforts of bright and promising young men to cram for examination by substantially one year's study. Their success is their greatest misfortune. They must have time, before daring to think of themselves as lawyers, to grow into the habits of thought, into the language, into the spirit of the profession; and this can only be the work of years.

THE MOOT COURT

Is held every Friday, and is made to represent some actual court, with its clerk and sheriff; and the matters discussed arise in some supposed cause. Regular pleadings are required, and, when the cause is supposed to be in the Supreme court, in addition to the pleadings, papers are prepared, necessary in actual practice, as the

writ of error, assignment of errors, bill of exceptions embodying the instructions to the jury, rulings upon the admission or exclusion of evidence, motions for new trial, or in arrest, etc. Briefs of points and authorities must also be filed, and no one in default will be permitted to argue a cause. A member of the Senior class is called to sit as special judge in each cause, who, the next week, gives his opinion in writing, subject to appeal to the presiding officer.

LIBRARY.

The library facilities have been greatly increased, and additions to it will be annually made. Students are urged in the future to make as much use of the library as possible. The professor in charge of the library will give whatever assistance may be needed in learning how to use law books, to investigate questions of law, prepare briefs, etc.

DEGREES AND HONORS.

Those of the Senior class who sustain an examination will be entitled to the degree of Bachelor of Laws.

Whenever a candidate for graduation attains a high degree of excellence in his class work, the degree of "Bachelor of Laws" will be conferred upon him with distinction, and the words "*cum laude*" will be incorporated in the diploma. In determining the required degree of excellence, the student's general scholarly attainments will be considered.

Only those Seniors who shall have attained "first rank with distinction" shall be eligible to the honor of valedictorian at Commencement.

The members of the Senior class are all invited to write essays upon some subject in the law assigned to them by the Faculty. The essays so written will be submitted to a committee of judges charged with the duty of designating the best two of said essays. The best one of the two thus designated will be read by the author at Commencement exercises, and both of them will be recommended for publication. Students not writing essays as aforesaid shall not be eligible to the honors and distinctions heretofore mentioned as in addition to the right of graduation.

The heirs of the late Hon. James S. Rollins have provided for the establishment of a prize fund, whose interest shall be expended annually in the bestowal of a prize of fifty dollars upon the most worthy Junior in several of the colleges of the University. According to the terms of the trust, one of these prizes is to be awarded to the Junior law student who shows himself entitled thereto by his superior scholarship and moral conduct. The prize will be awarded at the Commencement following the close of the Junior year.

All who receive the degree are by law admitted, without further examination, to practice in the Missouri courts.

EXPENSES.

Tuition is as follows: For the first year, \$50, payable in advance; for the second year, \$40; for candidates for the Senior class, who have not been members of the Junior class, \$50; for candidates entering Junior class after January 1st, \$35. Boarding is had in clubs at \$2.25 per week, and in families from \$3 to \$4.50. No fee for incidentals except the fee of \$5 charged graduates for their diplomas.

The Treasurer's receipt should be at once presented to the Proctor at the University, when the name of the student will be entered upon the University roll, and a card to that effect will be delivered to him.

The student must present the card thus received from the Proctor to the Secretary of the Faculty, who will enroll his name and issue to him his matriculation ticket, with the instructions necessary for enabling him to have his name entered on class roll.

The Law students have access to the Academic departments and the Library of the University without additional charge.

DISCIPLINE.

The Faculty requires every student to pay strict attention to the duties assumed by him, and to be honorable and creditable in deportment to Faculty, fellow-students and citizens. This is the only rule of behavior, the highest penalty for violation of which is expulsion.

The Law department opens the first Tuesday in October, and closes the first Thursday in June, of each year.

For information and catalogues, address the Dean at Columbia, Mo.

XVI. MEDICAL SCHOOL.

Contract of Co-operation Entered into by and between the Curators of the University
of the State of Missouri, at Columbia, Missouri, and the Missouri
Medical College, at St. Louis, Missouri.

UNIVERSITY BOARD ROOM. }
COLUMBIA, Mo., June 4, 1886. }

Copy taken from minutes of Board of Curators of the University of the State
of Missouri, meeting of June 2, 1886.

J. H. DRUMMOND,
Secretary of Board.

LETTER OF JUDGE MARTIN.

ST. LOUIS, May 26, 1886.

Dr. S. S. Laws—Dear Sir: I have prepared a scheme of co-operation, which has been submitted to Dr. Prewitt, and meets his approval. I believe it embodies your ideas also. It can be easily changed or modified to meet the wishes of the Board of Curators.

The Missouri Medical College, as existing at present, rests upon an act of the General Assembly, approved April 2, 1885. (Sess. Acts, 1885, p. 99.) In pursuance of that act, the circuit court, upon a petition filed, made a decree giving it all the authority contained in the old charter of 1845. (Sess. Acts, 1845, p. 110.)

Therefore, for purposes of this contract, you need consult only the decree, the act of 1885 and the charter of 1845. Dr. Prewitt will take up with him or send a copy of this decree.

As to the legality of the scheme of co-operation I have no serious doubt. Neither corporation is merged in the other, and neither has any substantial control over the other: neither can be held liable for the other's debts. The two corporations, with a single aim of advancing the objects of their incorporation, unite in furnishing to the students resorting to both institutions, with advantages and benefits peculiar to each.

The whole plan is protected from any serious or continued injury to either party by the reservation of the right of revocation or dissolution upon short notice.

Hoping that the scheme may meet with a favorable consideration,

I remain, truly yours,
ALEX. MARTIN.

CONTRACT.

This contract of co-operation, entered into this second day of June, 1886, by and between the Curators of the University of the State of Missouri, at Columbia, Mo., and the Missouri Medical College, at St. Louis, Mo.,

Witnesseth: Whereas, the said contracting parties are convinced that the students in the Medical department of said University would derive superior advantages by being admitted to the lectures and instructions of the Missouri Medical college at St. Louis, and that the students before entering said Missouri Medical college would derive superior advantages in being admitted to the lectures and instructions enjoyed by medical students in said University; now, therefore, in consideration of the premises, and for the sole purpose of securing said benefits, it is stipulated and agreed by and between said contracting parties as follows:

1st—The present Medical school of said University shall be designated and known in this arrangement of association as Section No. 1 of the Medical department of the University of the State of Missouri; and the said Missouri Medical College, at St. Louis, shall be designated and known as Section No. 2 of the Medical department of the University of the State of Missouri.

2d—Students who shall complete the preparatory studies, and also the studies prescribed in the Junior year of Section No. 1, shall receive a certificate to that effect, properly signed by the President, and also the tickets of the several professors of said Section No. 1.

3d—Any student, on the presentation of such certificate and tickets to the said Missouri Medical College, designated as Section No. 2, shall be entitled to all the privileges of said Section No. 2, but shall be required to pursue only the subjects of study not completed in Section No. 1, and shall be required to pay only for the matriculation ticket, and for the tickets to the subjects of study and instruction required of him in Section No. 2.

4th—Each student from Section No. 1 who completes the course of study and instruction in Section No. 2, as provided in these articles of agreement, upon passing satisfactory examination shall be entitled to a diploma jointly issued by the authorities controlling both sections, and all diplomas of Section No. 2, as well as the joint diplomas, shall be signed and delivered by the President of said University.

5th—In the event of prizes, medals or distinctions being awarded, the standing of students from Section No. 1 shall be credited to them in all such contests.

6th—The authorities controlling Section No. 2 are to exercise an active influence, in all circulars and catalogues, to induce students to first complete their Junior course in Section No. 1, at Columbia.

7th—There shall be a joint annual catalogue or circular issued by the two sections, which shall be submitted to each section for approval, before the printing and circulation thereof.

8th—It is covenanted and agreed between said parties that neither the University nor its Board of Curators shall be liable for any debt, damage or default on account of said Section No. 2, and in like manner said Missouri Medical College shall not be liable on account of any debt, damage or default on account of Section No. 1.

9th—This contract of co-operation, having been entered into for the mutual advantage of the contracting parties, may be terminated or discontinued at the option of either party, by giving six months' notice of the intention to terminate and discontinue the same.

10th—The separate and independent personality of said contracting parties shall remain the same as heretofore, and the government of each section by its proper and legal authorities shall not be affected in any manner by this contract of co-operation.

Witness the signatures and seals of said parties, this day and year first above written.

E. W. STEPHENS,

President of the Board of Curators, University of the State of Mo.

CHARLES GIBSON,

President of the Board of Trustees of the Mo. Medical College.

The above papers are true copies of those now on file in my office, and which papers have become part of the minutes of this Board.

ATTEST:

J. H. DRUMMOND,

Secretary Board of Curators.

[The contract heretofore existing between the Medical department of the State University and the Missouri Medical College, terminates before the end of this calendar year by notice given to that effect on March 29 by the Board of Curators to the Missouri Medical College. The altered conditions of the case, looking toward a reorganization and strengthening of the Medical department as one of the colleges of the State University, will be embodied in an announcement to be published later, and containing the necessary information for students and public.]

SECTION NO. 1, LOCATED AT COLUMBIA, MO.

(Founded 1845.)

FACULTY.

M. M. FISHER,, D. D., LL. D.,
Chairman of the Faculty.

PAUL SCHWEITZER, PH. D.,
Professor of Chemistry and Toxicology.

ANDREW W. MCALESTER, A. M., M. D.,
Professor of Surgery and Obstetrics.

WOODSON MOSS, M. D.,
Professor of Anatomy and Physiology, and Secretary.

GEO. D. PURINTON, A. M., PH. D.,
Professor of Medical Botany.

M. L. LIPSCOMB, A. M.,
Professor of Physics.

PAUL PAQUIN, M. D., V. S.,
Professor of Comparative Medicine and Director of Vaccine Laboratory (optional.)

First Semester—Sept. 11 to Jan. 28.							Second Semester—Jan. 28 to June 6.						
Studies.							Studies.						
Monday.....	8-8 45	9-10	10-11	11-12	12-1	Laboratory and sp'l work.	Monday.....	8-8 45	9-10	10-11	11-12	12-1	Laboratory and sp'l work.
Tuesday.....	8-8 45	9-10	10-11	11-12	12-1	2-4 8-10	Tuesday.....	8-8 45	9-10	10-11	11-12	12-1	2-4 8-10
Wednesday..	8-8 45	9-10	10-11	11-12	12-1	2-4 8-10	Wednesday..	8-8 45	9-10	10-11	11-12	12-1	2-4 8-10
Thursday....	8-8 45	9-10	10-11	11-12	12-1	2-4 8-10	Thursday....	8-8 45	9-10	10-11	11-12	12-1	2-4 8-10
Friday.....	8-8 45	9-10	10-11	11-12	12-1	2-4 8-10	Friday.....	8-8 45	9-10	10-11	11-12	12-1	2-4 8-10
Saturday	8-8 45	9-10	10-11	11-12	12-1	2-4 8-10	Saturday	8-8 45	9-10	10-11	11-12	12-1	2-4 8-10
Principles of Obstetrics.....							General and Special Pathology.....						
Anatomy.....							Physiology.....						
Physiology.....							Comparative Medicine.....						
Advanced Chemistry.....							Applied Chemistry and Toxicology.....						
Medical Botany.....							Materia Medica and Therapeutics.....						
Materia Medica and Therapeutics.....							History and Philosophy of Medicine.....						
The Microscope and Experimental Laboratory.....							Laboratory.....						
Dissecting.....							Dissecting.....						

Laboratory work comprises work done in the Laboratories of Chemistry, Physics, Botany, Zoology and Vaccine.

In addition to the above Junior Medical course, all students, before receiving the certificate which secures to its holders certain important advantages in section No. 2, as matriculants from section No. 1, must pass a satisfactory examination upon the following subjects, to-wit :

FIRST SEMESTER.

- II. Latin.
- III. Physics.
- IV. Zoology and Drawing.
English Composition.
Arithmetic and Metrical System.

SECOND SEMESTER.

- II. Chemistry.
Political Science.
English Composition.
Botany and Book-keeping.

These subjects are arranged in a continuous year's course for such as may have only an imperfect common school education.

Those who fail to make good this elementary academic work will only have, as hitherto, their tickets to show for work done in the Junior Medical Course.

Fee for year of Academic work, \$20.00.

Fee for Junior Medical Course, including Demonstrator's ticket, \$50.00.

Session 9 months, and board, \$3.00 to \$4.50 a week.

No fees will be remitted.

Remark—It must be distinctly understood that students can still enter both schools the same as formerly—the above conditions being arranged for the benefit of such as may desire to avail themselves of the special advantages of the co-operation of the two sections as provided. The degree of M. D. will not be conferred by section No. 1, except jointly with section No. 2.

LIST OF TEXT-BOOKS.

- | | | |
|----------------------|--------------------------------|-----------------|
| Anatomy—Gray. | Physiology—Dalton. | Chemistry. |
| Obstetrics—Playfair. | Materia Medica—Barthalow. | Medical Botany. |
| | General and Special Pathology. | |

GENERAL PLAN OF INSTRUCTION.

Instruction in this school is given by lectures and recitations.

It has occurred, in an instance of marked interest, that the Diploma of our Missouri University Medical School has been recognized by one of the leading German universities after careful inquiry, and its holder was, without examination, honored as Doctor of Medicine.

The length of the session, NINE MONTHS, renders it practicable to distribute the different branches among the teachers in the most satisfactory manner, and in their natural order and succession. The student is thoroughly drilled each day by examinations upon the lectures of the previous day, and by recitations from the text-books. The students who graduate with our Joint Diploma are entitled to recognition as having taken a three years' course.

By this method of teaching, it is claimed that we avoid the process of cramming—a deleterious practice, too prevalent in the general system of medical education. We believe that the proposed method of teaching will do more to elevate the standard of medical education, and to exalt the dignity of the profession, than any other measure that could be adopted.

The duties of the school are so distributed as to allow of the study of branches which, while they are of vital importance to the well-educated physician, are almost entirely ignored in many of the schools of this country.

Besides the ordinary instruction in Chemistry, a special course is given to advanced students in Toxicology, the material and appliances for teaching which are not excelled by any institution in the United States.

The students are also taught the use of the microscope, both in relation to pathological and physiological studies. For instruction in this most important and beautiful subject, the students are arranged in classes of five each. Besides the microscope, the Department has the benefit of two superior magic lanterns. For illustrating lectures with the above instruments, there are over 500 slides.

Among the advantages offered by this school is the privilege granted without further cost, to all students who enter the Medical Department, of pursuing such studies as they may desire in the academic course. Or academic students may take Anatomy and Chemistry in the medical course, preparatory to entering on the full medical course, after graduating in Arts, Science or Letters. Some students pursue this plan every year.

The department is equipped with models in clastic and papier mache, plaster casts, drawings and other appliances for the illustration of the lectures on anatomy, surgery and physiology.

Among the many valuable preparations for demonstrating anatomy and surgery is Dr. Auzoux's Clastic Man, a complete and accurate model of the male human body. The figure is five feet ten inches in height, and is composed of ninety-two separate parts, which may be detached from one another. It exhibits over two thousand details of the viscera, muscles, nerves, blood-vessels, etc.; in short, all that is usually embraced in a complete treatise on anatomy.

Also, Auzoux's female pelvis, with the external organs of generation, the lumbar vertebræ, diaphragm, muscles, aponeuroses of the perineum, vessels and nerves.

Also, his collection illustrating ovology. These models are on an enlarged scale, and exhibit the modification of the ovum, envelopes and viteline vesicle, etc.

In addition to the above are eight uteri, in clastic, containing the products of conception at the first, second, third, fourth, eighth and ninth months, with examples of tubular and ovarian pregnancy.

Another model, to which we deem it proper to call special attention, is Dr. Auzoux's synthetic model of the brain, which exhibits the structure of that organ upon an immensely magnified scale. Designed in conformity with the new anatomical indications furnished by Dr. Luys, this model presents a resume of all the researches of ancient and modern anatomists. This entirely new method of studying the brain opens an immense field for the research of physicians and philosophers.

The models of the eye and ear are greatly enlarged and very accurate, showing the complete gross structure of these organs, as described by modern anatomists.

The preparation of the head is most admirably executed. The bones are disarticulated, and mounting according to the methods of Beauchene.

Besides these invaluable models and preparations, we have a complete set of the German anatomical models in plastic, made at Leipsic.

No physician can truthfully claim to be cultivated in his profession who is ignorant of the history of its rise and progress, and of the grounds upon which rest its claims to rank among the sciences. Nor is any man thoroughly qualified to practice medicine who is ignorant of the science of Psychology. The lectures on psychological medicine are illustrated by models and drawings of the most accurate and artistic construction.

PRACTICAL ANATOMY.

Every facility is afforded the student for the study of practical anatomy. Adequate provision is made for a supply of subjects amply sufficient for the number of students. The dissecting rooms are large and well ventilated, and will be open during the whole winter season, where, under the guidance of the Demonstrator, the student must, by dissection, acquire a practical knowledge of the human body in all its parts.

President Laws has placed at the service of the Medical school his rare lecture-room helps, including a complete set of Marshall's Plates, large and small, last edition; the entire collection of over one hundred colored plates used by the late Dr. Crosby in his lectures, and prepared at an expense of about \$1,500; also the plates of Hirshfield, Rudinger and others, together with over 400 projections, etc., etc.

It is the aim of this department to make its honors testimonials of merit, and not mere certificates of an attendance on a prescribed course of instruction.

Medical students are required to take a prescribed course in Analytical Chemistry under the direction of the Professor of Chemistry and Toxicology.

The next session will begin on the second Tuesday, September 9, 1890; the Junior course will close on the first Thursday in June, 1890. The fee for tuition for the term of eight or nine months is \$40.00; for demonstrator's ticket, \$10.00; *both are payable at the time of matriculation, and required of every student. No deductions are made for students entering after the beginning of the session.*

PURCHASING TEXT-BOOKS.

All works used as text-books in the school, as well as books of reference, can be purchased here on as favorable terms as in any of the eastern cities.

For any further information in relation to the school, address

WOODSON MOSS, M. D.,
Secretary Medical Faculty, Columbia, Mo.

VACCINE AND EXPERIMENTAL LABORATORY.

The following minute of the Medical Faculty explains itself, and has been approved by the Curators, to wit:

WHEREAS, The attention of the Medical Faculty has been called to the importance of establishing a vaccine and experimental laboratory by the Board of Curators of the Missouri University for the purpose of aiding in furnishing pure small-pox lymph and other vaccine matter for the prevention of the infectious diseases of man and animals, and has also learned that the State Board of Health favors the same; and still further, that a Farmers' Institute of the Missouri State Board of Agriculture recently expressed itself warmly in favor of there being a vaccine and experimental laboratory opened by the State in connection with the Missouri Agricultural College, for the purpose of pursuing the methods of Pasteur and others, so beneficial in the mitigation and control of infectious diseases of man and animals; now, therefore,

Resolved, That this Faculty learns of this movement with great satisfaction, recommends to the Curators the establishment of such a laboratory, and will gladly co-operate in the same, and would express confidence in Dr. Paquin's competence to take charge of the same.

Resolved, That the Medical Faculty of the University of the State of Missouri would also recommend to the Board of Curators the establishment of the degree of M. C. D.—Doctor of Comparative Medicine—to be conferred on such persons as shall in addition to the course for M. D. complete the course prescribed for V. S., so called.

The following plan for organizing the vaccine and experimental laboratory is recommended:

1. "It shall be styled the Missouri State University Vaccine and Experimental Laboratory.

2. "Its officers shall be as follows: General Superintendent, Dean of Agricultural College; Chief Operator of Laboratory, State Veterinarian; assisted by one member of Medical Faculty.

"Board of Inspectors: the State Board of Health and Medical Faculty of University."

The above plan and resolution was recommended to the Board of Curators by the Medical Faculty.

The Missouri University Faculty has the competency and the enterprise to do, and to do well, what is here undertaken in the interest of the commonwealth; and it behooves us as a great and growing State to develop primarily our own resources and to cultivate self-reliance in dealing with the issues before us.

For the James S. Rollins scholarship to be awarded in this department, see page 138.

SECTION NO. 2, THE MISSOURI MEDICAL COLLEGE.

BOARD OF TRUSTEES.

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M. M. FISHER, D. D., LL. D.,
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WM. M. MCPHEETERS, M. D.,
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*Professor of Clinical Surgery and Surgical Pathology, N. E. Corner of Jefferson Avenue
 and Locust Street.*

OTTO A. WALL, M. D., PH. G.,
Professor of Pharmacy, 2111 South Second Street.

C. A. TODD, A. M., M. D.,
Professor of Anatomy and diseases of the Ear and Throat, 2645 Washington Avenue.

J. P. KINGSLEY, PH. B., M. D., SECRETARY,
Professor of Materia Medica, Therapeutics and diseases of children, 2330 Washington Ave.

T. F. PREWITT, M. D., DEAN,
*Professor of Principles and Practice of Surgery and Clinical Surgery, Corner of Twenty-
 second and Olive Streets.*

C. O. CURTMAN, M. D.,
Professor of Chemistry and Director of Chemical Laboratory, 3718 N. Ninth Street.

G. A. MOSES, M. D.,
Professor of Obstetrics and diseases of women, 2901 Washington Avenue.

LUDWIG BREMER, M. D.,
*Professor of Physiology, Histology and Pathological Anatomy—Director of the Biological
 Laboratory, 2023 Park Avenue.*

W. A. HARDAWAY, A. M., M. D.,
Clinical Professor of Dermatology.

C. A. TODD, A. M., M. D.,
Demonstrator of Anatomy.

A. V. L. BROKAW, M. D.,
 C. H. DIXON, M. D.,
Assistant Demonstrators.

ASSISTANTS.

JUSTIN STEER, PH. B., M. B.,
Adjunct to Professor of Practice of Medicine and Lecturer on Clinical Medicines.

F. STUEVER, A. M., M. D.,
Adjunct to Professor of Ophthalmology.

F. D. MOONEY, M. D.,
Clinical Assistant to the chair of Gynecology.

A. V. L. BROKAW, M. D.,
Clinical Assistant to the chair of Surgery.

O. E. FORSTER, M. D.,
Clinical Assistant to the chair of Otology and Larynxology.

F. R. EVERSOLE, M. D.,
Clinical Assistant to the chair of Hermatology.

T. A. MARTIN, M. D.,
Clinical Assistant to the chair of diseases of children.

PETER FINING,
Janitor.

LIST OF TEXT-BOOKS.

Anatomy—Gray, Allen, Weisse, Holden's (Dissector).
 Surgery—Gross, Holmes, Bryant, Billroth, Hamilton, Thompson on Urinary
 Organs.
 Practice of Medicine—Flint, Niemeyer, Aitkin.
 Materia Medica—Barthalow, Farquharson, National Dispensary.
 Physiology—Kirke, Foster, Dalton, Carpenter, Landon.
 Chemistry—Roscoe, Richter, Simon, Fownes, Norton's Natural Philosophy.

Chemical Laboratory—Beilstein-Curtman, second edition (for reference: Fresenius, Classen.)

Toxicology—Taylor, Beck, Tidy.

Pharmacy—U. S. Pharmacopœia, Parrish.

Obstetrics—Hodge, Playfair, Lusk.

Diseases of Women—Thomas, Emmet, Barnes.

Diseases of Children—Smith, Meigs & Pepper, Vogel, Day.

Clinical Medicine—Barclay's Medical Diagnosis, DaCosta's Medical Diagnosis, Tanner's Clinical Medicine.

Nervous Diseases—Bauduy, Hammond, Todd, Rosenthall.

Insanity—Maudsley, Bucknill, Tuke.

Histology—Schæfer, Klein.

Ophthalmology—Nettleship, Wells, Carter.

Otology—St. John Boosa.

Diseases of the Throat—Mackenzie.

Dermatology—Duhring, Fox, Hardaway on Vaccination.

FEEES.

Lecture Fees for the Course.....	\$60 00
Matriculation Fee (good until the following March).....	5 00
Admission to the Dissecting Room (material plenty and at cost).....	10 00
Examination for Degree (not returnable.) Students examined at end of the second year in the Graded Course pay one-half this fee.....	30 00
Admission to the College clinics.....	FREE

Students from section No. 1 are not obliged to take out tickets in those branches finished in that section, nor do they pay examination fees in those branches.

No fee charged for graduation or diploma.

The fees must be paid promptly at the beginning of the term, as the tickets will be required to be exhibited after the expiration of the second week of session.

Physicians residing in or passing through the city are cordially invited to attend the lectures and clinics of the College.

Graduates of this school may enjoy the privileges of attending the lectures and clinics free of charge.

Students may attend the lectures of one or more Professors on paying the Matriculation Fee and purchasing single tickets at \$10 each.

Students may select their seats in the lecture rooms when they take their tickets, or the Secretary will select for them, on receipt of the Matriculation Fee, \$5, previous to the opening of the session; seats thus taken, if not occupied by the end of the second week of the winter term, will be forfeited and assigned to students who are present to occupy them.

Students on arriving in the city should call on the Janitor, the Dean or the Secretary at the College, N. E. corner of Twenty-second street and Lucas avenue.

For further information address, with stamp or postal card enclosed,

T. F. PREWITT, M. D., Dean.

PRELIMINARY EXAMINATIONS.

A preliminary examination, as stated in previous catalogues, is required as a condition of admission to the regular Winter Course of Lectures. This examination will be held at the beginning of the Winter or Spring term, as the student enters. It will embrace the branches of a good English education, such as are taught

in the public schools, namely: Mathematics, Elementary Principles of Physics and English Composition, a short paper being written upon a given subject.

Gentlemen who are graduates of a literary or scientific college, academy or high school, or who have passed the entrance examination of a literary college in good standing, those who have a county or State certificate, graduates in medicine and students taking lectures for a special purpose other than securing the degree, will be exempt from examination.

Gentlemen are advised to bring with them documentary proof of their preliminary education, as explained above. and thus save themselves the necessity of the examination at St. Louis.

For any further information in relation to section No. 2, address

T. F. PREWITT, M. D.,

Corner Twenty-second and Olive streets, St. Louis, Mo.

There were in attendance during the past session two hundred and forty (240) students. There were one hundred and five (105) graduates.

THE SCHOOL OF MINES

OF THE

UNIVERSITY OF MISSOURI.

CATALOGUE, 1890-91.

CORPORATION OF THE UNIVERSITY OF MISSOURI.

[“ The University is hereby incorporated and created a body politic, and shall be known by the name of THE CURATORS OF THE UNIVERSITY OF THE STATE OF MISSOURI.—Corporate name, Rev. Stat. 1879, Sec. 7230.]

HON. G. F. ROTHWELL.....	Moberly	} Term expires Jan. 1, 1891.
HON. C. C. BURNES.....	St. Joseph..	
GOV. E. O. STANARD.....	St. Louis...	

JUDGE JOHN HINTON	Columbia...	} Term expires Jan. 1, 1893.
GEN. E. Y. MITCHELL.....	Rolla	
HON. R. B. OLIVER.....	Jackson.....	

HON. B. M. DILLEY	Hamilton...	} Term expires Jan. 1, 1895.
JUDGE G. B. MACFARLANE.....	Mexico	
HON. GARDINER LATHROP.....	Kansas City..	

THE SCHOOL OF MINES.

EXECUTIVE COMMITTEE.

GEN. E. Y. MITCHELL, Chairman.....	Rolla.
JOSEPH E. CAMPBELL, Esq.....	Rolla.
JOHN S. LIVESAY, Esq.....	Rolla.
D. W. MALCOLM, Treasurer	Rolla.

T. M. JONES, Secretary of Executive Committee

OFFICERS.

M. M. FISHER, D. D., LL. D.,

Chairman of the Faculty of the University of Missouri.

SCHOOL OF MINES

W. H. ECHOLS, Director and Chairman of Faculty.

E. A. DRAKE, Secretary of the Faculty and Librarian.

FACULTY.

W. H. ECHOLS, B. Sc., C. E. (University of Virginia.)

Professor of Engineering.

W. H. SEAMON, B. A. S. (University of Virginia),

Professor of Analytical Chemistry and Metallurgy.

W. B. RICHARDS, M. A. (University of Virginia),

Professor of Mathematics.

E. A. DRAKE, M. A. (University of Wisconsin),

Instructor in Academic department.

P. J. WILKINS, B. S. (Michigan A. and M. College),

Instructor in Preparatory department.

GEO. R. DEAN, C. E. (Missouri School of Mines),

Instructor in Mathematics and Physics.

INTRODUCTORY STATEMENT.

The School of Mines and Metallurgy is an Institute of Technology, a College of Engineering with Civil and Mining Engineering and Metallurgy as specialties. It is a college of the University of the State of Missouri, and is located at Rolla, Phelps county, on the line of the St. Louis and San Francisco railway, about one hundred miles southwest of St. Louis. The location, pre-eminently healthful, is in the midst of an extensive and rapidly developing iron section with districts abounding in lead and zinc deposits within easy access, and thus affords excellent opportunities for the field study of the modes of occurrence of the ores of these metals as well as for the practical investigation of their methods of treatment.

The institution was opened in 1871 for the instruction of young men in the various branches of Civil and Mining Engineering and Metallurgy, with power to confer the degrees of Civil and of Mining Engineer. The School of Mines was organized under the provisions and on the conditions of an act of Congress, approved July 2, 1862, granting government lands for the establishment of Schools of Agriculture and of Mechanical Arts. The School of Agriculture was located at Columbia in connection with the Academic departments of the State University, while the School of Mechanical Arts was located as an Institute of Technology, under the name of the Missouri School of Mines and Metallurgy, at Rolla. The first class was graduated in June, 1874, having completed the full course. The Nineteenth year of the institution is now closing.

During the present year a new course, that of Mechanical Engineering, has been organized and added to the professional work of the institution. It is intended to develop this department fully, with the hope in view that the next Legislature will make the necessary appropriations for the erection of a mechanical laboratory and machine shops in which thorough and practical instruction may supplement the class-work in the theory of machinery and mechanical engineering.

In addition to the three professional courses of instruction, the institution now offers three additional courses in special scientific work, each leading to the degree of Bachelor of Science.

It is the design of the school to give, in its special lines of work, instruction that is as complete and as exhaustive as may be attained, at once practical and thorough, based on scientific principles. Its diplomas are granted only to those who win them by honest, earnest and successful work. Throughout the course, thoroughness and a high standard of excellence is constantly held in view, and no effort is neglected which may tend to secure to the student a training which may enable him to become a successful engineer or to reach a place among the educated scientists of the present day.

In order to maintain the high standard of the institution, it was found necessary to establish a preparatory department in which young men inadequately prepared could be trained to meet the requirements of the advanced work. This course is still maintained for the benefit of those who may wish to prepare themselves here for the work in the higher courses.

At the session of 1887 of the Legislature of Missouri a bill was passed providing for the establishment of an academic course of study at the School of Mines. In pursuance of the provisions of this act the Academic department was therefore organized, and a general course in academic instruction is offered as outlined in the exhibit of the Academic course.

Following the example of the Massachusetts institute of technology and the opinion of the American Society of Civil Engineers, it has been decided by the Faculty of the School of Mines to no longer confer the degree of Civil, Mining or Mechanical Engineer immediately on graduation, but to confer upon graduation the degree of Bachelor of Science in civil engineering, Mining Engineering or Mechanical Engineering, respectively; and after a stated interval of time, during which the graduate has thoroughly identified himself with his profession, he may receive on application to the Faculty the full degree in Civil, Mining or Mechanical Engineering.

By an act of the Legislature, in 1872, the doors of the University of Missouri were thrown open to women, and they now have access to all of its departments. A number of young women take advantage of this opportunity to pursue the studies in the Academic course of the School of Mines. They enter on an equal footing with the men, and the same class of work is required of them.

COURSES OF INSTRUCTION.

The School of Mines and Metallurgy of the University of Missouri, in order to meet most fully the designs of its establishment as expressed in the act of the Legislature founding it, namely: "to teach such branches as are related to the mechanic arts and mining, without excluding other scientific and classical studies, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life," and in the supplemental act of the Legislature of 1887, instituting an Academic course, offers the following regular courses of instruction:

- I. Mining Engineering.
- II. Civil Engineering.
- III. Mechanical Engineering.
- IV. Chemistry.
- V. Mathematics and Physics.
- VI. General Scientific Course.
- VII. Academic Course.
- VIII. Preparatory Course.

Courses I and II are the Professional courses about as now established; course III is a Professional course introduced with the coming session; course IV and V present an opportunity to pursue fully special lines of scientific work; course VI is, as its name indicates, a general Scientific course, including a greater variety of subjects than either of the preceding, but with relatively smaller requirements in each; course VII is the Academic course as at present maintained.

For the satisfactory completion of any of courses I-VI, inclusive, the degree of Bachelor of Science in the course pursued is conferred.

In the Professional courses I, II and III, as stated elsewhere, the degree of Mining, Civil or Mechanical Engineer is, in accordance with the best usage of the day, conferred only upon certain conditions subsequent to graduation. For the completion of course VII a diploma of graduation is bestowed, but no titled degree is given.

To pursue successfully the studies of any of the Baccalaureate courses I-V a thorough knowledge of the elements of Algebra and Geometry is essential, and for most of them a similar acquaintance with the elements of Physics and Chemistry is highly desirable, if not equally necessary. The Preparatory course (VIII) is

maintained for the benefit of those who lack such preparation. Students who finish this course receive a certificate stating the fact of such completion. Experience has shown that frequently valuable time is wasted by men in attempting the higher work without having adequately grasped preliminary subjects, and hence, to guard against the disappointment that must almost inevitably follow such misdirected efforts, it will, in the future, be required, as a condition of entrance upon any of the courses I-V, inclusive, that candidates who have not completed the Preparatory course here must stand a satisfactory examination upon its equivalent in Mathematics, at least.

The work of the college is distributed among the five schools of Mining, Civil and Mechanical Engineering, Analytical Chemistry and Metallurgy, Pure Mathematics, Mineralogy and Geology and Physics, and an Academic and Preparatory department. At present instruction in Mineralogy and Geology is given by the Professor of Chemistry. The elementary work of Physics is chiefly carried on in the Preparatory department, while the course in Analytic Mechanics is now assigned to the school of Engineering.

Below will be found a scheme of the studies in each course. By comparing this schedule with the subsequent statements of the work in the individual schools, the character and amount of the requirements in each case may be learned. Applicants for degrees are invariably required to complete here the full amount of work prescribed in order to obtain the degree. While the work of each course is distributed among three distinct classes, each extending through one year, the degree is conferred not for attendance during any definite or indefinite period of time, but for actual work done. Thus, in exceptional cases, a man who is well prepared and capable might, by diligence, attain the degree in two years.

Besides the regular degree courses, students may take special courses in Engineering, Chemistry, Assaying or Mathematics, and will be given certificates for the amount and quality of work performed.

SCHEDULES OF STUDIES.

I. COURSE OF STUDY IN MINING ENGINEERING.

JUNIOR CLASS.

Trigonometry,	Qualitative Analysis,
Analytic Geometry,	Descriptive Geometry,
General Chemistry,	Engineering Instruments,
Blowpipe Analysis,	Drawing,
Determinative Mineralogy,	Field Work.

INTERMEDIATE CLASS.

Solid Analytic Geometry,	Qual. and Quan. Analysis,
Differential Calculus,	Geology,
Integral Calculus,	Exploitation of Mines,
Chemical Technology,	Drawing,
Mineralogy and Geology,	Assaying,
	Field Work.

SENIOR CLASS.

Metallurgy,	Quantitative Analysis,
Qualitative Analysis,	Assaying,
	Thesis.

II. COURSE OF STUDY IN CIVIL ENGINEERING.

JUNIOR CLASS.

Trigonometry,	Determinative Mineralogy,
Analytic Geometry,	Descriptive Geometry,
General Chemistry,	Engineering Instruments,
Blowpipe Analysis,	Drawing,
	Field Work.

INTERMEDIATE CLASS.

Solid Analytic Geometry,	Geodesy,
Differential Calculus,	Engineering Construction,
Integral Calculus,	Lines of Communication,
Mineralogy and Geology,	Drawing,
	Field Work.

SENIOR CLASS.

Analytic Statics,	Stability of Structures,
Applied Mechanics,	Hydraulic Engineering,
Materials of Construction,	Field Work,
Drawing,	Thesis.

III. COURSE OF STUDY IN MECHANICAL ENGINEERING.

JUNIOR CLASS.

Trigonometry,	Determinative Mineralogy,
Analytic Geometry,	Descriptive Geometry,
General Chemistry,	Engineering Instruments,
Blowpipe analysis,	Drawing,
	Field Work.

INTERMEDIATE CLASS.

Solid Analytic Geometry,	Mineralogy and Geology,
Differential Calculus,	Physics,
Integral Calculus,	Statics,
	Kinematics of Machinery.

SENIOR CLASS.

Strength of Materials,	Mechanics of Machines,
Dynamics,	Theory of Prime Movers,
	Thesis.

IV. COURSE OF STUDY IN CHEMISTRY.

JUNIOR CLASS.

General Chemistry,	Determinative Mineralogy,
Blowpipe Analysis,	Qualitative Analysis,
	German.

INTERMEDIATE CLASS.

Qualitative Analysis,
Quantitative Analysis,
Assaying,

Chemical Technology,
Mineralogy and Geology,
German.

SENIOR CLASS.

Metallurgy,
Qualitative Analysis,

Quantitative Analysis,
Assaying,
Thesis.

V. COURSE OF STUDY IN MATHEMATICS AND PHYSICS.

JUNIOR CLASS.

Trigonometry,
Analytic Geometry,

Descriptive Geometry,
Physics,
French or German.

INTERMEDIATE CLASS.

Solid Analytic Geometry,
Differential Calculus,
Integral Calculus,

Statics,
Kinetics,
Dynamics,
French or German.

SENIOR CLASS.

Projective Geometry,
Theory of Equations,
Differential Equations,
Determinants,

Quaternions,
Statics,
Dynamics,
Sound, Light, Heat or Electricity,
Thesis.

VI. COURSE OF STUDY IN GENERAL SCIENCE.

JUNIOR CLASS.

Higher Algebra,
Geometry,

History,
French or German,
Composition and Rhetoric.

INTERMEDIATE CLASS.

Trigonometry,
Analytic Geometry,
Physical Geography,

Geology,
Physics,
French or German.

SENIOR CLASS.

General Chemistry,
Botany and Zoology,
Astronomy,

Political Economy,
English Literature,
Thesis.

VII. ACADEMIC COURSE.

FIRST YEAR.

FIRST TERM.

Mathematics.....	Arithmetic and Algebra.
Language.....	English Grammar.
History.....	U. S. History.

SECOND TERM.

Mathematics.....	Algebra.
Language.....	Composition and Rhetoric.
Science.....	Physical Geography and Physiology.

SECOND YEAR.

FIRST TERM.

Mathematics.....	Geometry
Language.....	Latin, or German
Science.....	Physics

SECOND TERM.

Mathematics.....	Geometry
Language.....	Latin, or German
History..	General History
Science.....	Civil Government

THIRD YEAR.

FIRST TERM.

Language.....	Latin, or German
Literature.....	English Literature
History.....	English History

SECOND TERM.

Language.....	Latin, or German
Science.....	Chemistry, Botany, Political Economy, Book-keeping (optional)

VIII. PREPARATORY COURSE.

FIRST YEAR.

FIRST TERM.

Mathematics.....	Higher Arithmetic and Algebra
Language.....	English Grammar
History.....	U. S. History

SECOND TERM.

Mathematics.....	Algebra
Language.....	Composition and Rhetoric
Science.....	Physical Geography

SECOND YEAR.

FIRST TERM.

Mathematics.....	Higher Algebra, and Geometry (Plane)
Science.....	Physics

SECOND TERM.

Mathematics.....	Higher Algebra, and Geometry (Space)
Science.....	Chemistry, and Physics.

SCHOOL OF ENGINEERING.

Prof. W. H. ECHOLS.

The School is organized with a view to acquaint the student *familiarly and practically* with the principles of his profession. The instruction is as thorough as possible, and is given partly through text-books and partly through lectures, with daily examinations upon both. A high standard of excellence in attainments is rigidly adhered to and required for the satisfactory completion of the course.

The work of this school is distributed among three departments of engineering, namely the civil, mining and mechanical branches of the profession, as follows:

CIVIL ENGINEERING.

The work of this department is distributed among the three classes:

JUNIOR.

1. *Descriptive Geometry*.—Theory of Parallel Projections, Orthogonal, Axonometric and Oblique, with the Construction of Shades and Shadows. Theory of Central Projections, or Linear Perspective.
2. *The Instruments*.—The instruments of the engineer, both field and office, are considered in order—their principles, details, construction, adjustments and uses.
3. *Drawing*.—The easy and accurate use of pen and brush is first acquired by exercises, and developed by application to projective drawings, shading and shadows; lettering.
4. *Field Work*.—The members of the Junior class enter the corps with the grade of Rodmen, and are required to do duty in that capacity before being advanced.

INTERMEDIATE.

1. *Engineering Geodesy*.—Theory and descriptions of the engineering field instruments, their uses, capabilities, measures of approximation and of precision are thoroughly discussed and applied in the measurement of horizontal and vertical distances and angles; general and particular methods and problems in traversing; triangulation, direct and indirect leveling; land, city, orographic and hydrographic surveying; government and engineering geodetic work; tachymetric processes.

2. *Engineering Construction*.—Surface excavation and mensuration of same; construction of shafts and tunnels; foundations on land and under water; materials of construction—timber, stone, brick, mortars and cements, and iron; building construction.

3. *Lines of Communication*.—Preliminary survey, location and construction of railways, highways, streets, canals, tunnels and bridges.

The greater portion of half a session being devoted to the study of the railroad work, every effort is made to insure this part of the course being of the highest practical value to the student.

4. *Drawing*.—The applications of projective geometry to stone cutting; the projections, templets and directing instruments for same; and to spherical projections; the working draughts of engineering structures, such as piers, foundations, wing walls, abutments, coffer-dams, caissons, trestles, mine timbering, etc., in all their details; construction of maps.

5. *Field Work*.—The members of the Intermediate class rank in the corps as instrument men, and in the field acquire practical knowledge of the use of all the field instruments of the engineer, including the compass, barometer, level, transit, solar, stadia and plane table.

SENIOR.

1. *Engineering Mechanics*.—General theory of force, stress, strain, energy and hydraulics, with applications to the analysis of structures; to the design of the elements of structures and machines, pipes for water, air and steam, ditches, flumes and canals for water, etc.

2. *Stability of Structures*.—Amount and distribution of load on structures; stability of elementary structures, the girder, the cable, the arch, the pier, with applications to the design of bridges, roofs, buildings, dams, abutments, arches, revetments, etc.; the strength of materials used in building construction.

3. *Hydraulic Engineering*.—Collection and filtration of potable water; conveyance of water, either by gravity or pumping; drainage, sewerage and water supply of cities and towns; disposal of sewage.

4. *Drawing*.—The application of graphical analysis to the solution of static problems of design; the stresses in structures; lines of resistance in dams, arches and piers; finished drawings, with colors and shadows in connection with the structures designed, their details in full; topographical maps.

5. *Field Work*.—The members of the Senior class enter the field as chiefs of parties, and it is under their direction and charge (subject to the professor's instruction) that the corps carries on the prescribed field work and surveys.

MINING ENGINEERING.

The work of this department is carried on in three classes, as follows:

JUNIOR.

1. *Descriptive Geometry*.—Theory of Parallel Projections, Orthogonal, Axonometric and Oblique, with the Construction of Shades and Shadows. Theory of Central Projections, or Linear Perspective.

2. *The instruments*.—The instruments of the engineer, both field and office, are considered in order—their principles, details, construction, adjustments and uses.

3. *Drawing*.—The easy and accurate use of pen and brush is first acquired by exercises, and developed by application to projective drawings, shading and shadows; lettering.

4. *Field work*.—The members of the Junior class enter the corps with the grade of Rodmen, and are required to do duty in that capacity before being advanced.

INTERMEDIATE.

1. *Engineering Geodesy*.—Theory and descriptions of the engineering field instruments, their uses, capabilities, measures of approximation and of precision are thoroughly discussed and applied in the measurement of horizontal and vertical distances and angles; general and particular methods and problems in traversing; triangulation, direct and indirect leveling; land, city, orographic and hydrographic surveying; government and engineering geodetic work; tachymetric processes.

2. *Engineering Construction*.—Surface excavation and mensuration of same; construction of shafts and tunnels; foundations on land and under water; materials of construction—timber, stone, brick, mortars and cements, and iron; building construction.

3. *Exploitation of mines*.—Ore deposits in beds, lodes, placers and pockets; location and attack by shaft, incline and adit; underground transport in galleries, inclines and shafts; drainage by adits or pumps; ventilation by furnace or blowers; lighting; and mechanical concentration of ores; timbering of mines.

4. *Drawing*.—The applications of projective geometry to stone cutting; the projections, templets and directing instruments for same; and to spherical projections; the representations of underground workings of mines in plan, elevation and axonometric projections; working draughts of engineering structures; of the simpler machines used in mining, hoists, cages, tramways; the drawing of maps, flat and topographical; geological sections and sketch views of the terrain.

5. *Field work*.—The members of the Intermediate class rank in the corps as instrument men, and in the field acquire practical knowledge of the use of all the field instruments of the engineer, including the compass, barometer, level, transit, solar, stadia and plane table. Particular attention is given to the field work of the U. S. deputy mineral surveyor and the use of the solar instrument.

SENIOR.

1. The work of this class consists of a prescribed course in Statics, Dynamics and Mechanics, with applications to a few of the simpler engineering structures and principles of design and strength of materials.

MECHANICAL ENGINEERING.

The work of this department is also carried on in three classes:

JUNIOR.

1. *Descriptive Geometry*.—Theory of parallel projections, orthogonal, axonometric and oblique, with the construction of shades and shadows. Theory of central projections, or linear perspective.

2. *The instruments*.—The instruments of the engineer, both field and office, are considered in order—their principles, details, construction, adjustments and uses.

3. *Drawing*.—The easy and accurate use of pen and brush is first acquired by exercises, and developed by application to projective drawings, shading and shadows; lettering.

4. *Field work*.—A knowledge of the simpler field operations is required of these students.

INTERMEDIATE.

1. *Class work*.—The previous course in Physics is here supplemented by a full course in Physics, Statics, Dynamics and Kinematics strictly with reference to the needs of the mechanical engineer.

2. *Drawing*.—The drawing board is in constant use throughout the year, the student making use of his previous training in constructing drawings of machinery, in shading, casting shadows and coloring the same, making graphical constructions of physical problems.

SENIOR.

1. *Engineering Mechanics*.—General theory of force, stress, strain, energy and hydraulics, with applications to the analysis of structures; to the design of the elements of structures and machines; to thermodynamics and the theory of heat engines; to the design of flywheels, governors, etc.; pipes for water, air and steam; ditches, flumes and canals for water, etc.

2. *Mechanics of machines*.—Theory of gearing, simple and compound; constructive mechanism, including the design of machines; efficiency of mechanism; regulators, including brakes; accumulators, governors and valves; transmission of energy and power, teledynamic, pneumatic and electric.

3. *Theory of Prime Movers*.—Hydraulic engines, water wheels, turbines and pumps; steam engines, including the design of the furnace, the boiler, the condenser and the engine proper; pneumatic engines and blowers; electric engines and dynamos.

4. *Drawing*.—The application of graphical analysis to the solution of statical problems of design and to the dynamic problems of machine design. The finished drawings of designed machinery, details of construction, etc.

A course of parallel reading of monographs by the best authors (with which the library is abundantly supplied) is prescribed in connection with the lectures and the subject-matter included in the examination papers. The best engineering periodicals of America, England and France are taken by the department and are always at the disposal of the student, who is constantly referred to them, and urged to read them. A feature of the work in the engineering school is the weekly meeting of the Quiz Club, in which the current articles in the engineering journals are discussed, and other topics relating to the professional work made familiar through discussion by the members. In the field work the student is thoroughly drilled in the best methods of survey and location known in modern practice. Expert and rapid manipulation of all the field instruments of the engineer is insisted upon: accuracy combined with rapidity is the essential feature. In the drawing room the student is steadily employed throughout the course in every variety of pen work of which the engineer makes use. In projective geometry the course is extensive and thorough, and assiduous use of the drawing board is necessary for success. Especial attention is given to the Graphical Statics, and to the solution of engineering problems by aid of the graphical processes. In design, specifications are furnished the student and written theses required, showing the design accompanied by all the necessary computations (arithmetical and graphical) finished drawings of the structures and details of the pieces, with working draughts for workmen. Particular stress is laid upon railway engineering as practiced in this country in all its details of preliminary survey, location and construction. In all the work of the school, the student is encouraged to think for himself, to acquire confidence in what he knows to be correct, and to depend upon his own resources to grasp subjects, and not textbooks.

In the absence of a professor for the chair of Physics, instruction in Analytical Mechanics is given in the department. Todhunter's Analytical Statics (new edition) and Williamson's Dynamics are gone through in the beginning of the Senior year, thus preparing the student to take firm hold of the Applied Mechanics of the Engineering school.

While the degree courses, as laid down, will be strictly adhered to for all who apply for the degrees, special students may pursue any particular course which they may elect and receive certificates therefor. Men who have neither the time nor the means to enable them to take the full engineering course will find it advantageous to concentrate a year's work upon some special branch of the profession.

Text-Books.—Church's and Waldo's Descriptive Geometry, with La Gournerie, Wiener and Breithof for reference. Rankin's Works, Cotterill's Applied Mechanics, DuBois' Graphical Statics; Chalmers' Graphical Determination of Forces in Engineering Structures. Callon's Lectures on Mining; Andrae's Coal Mining. Kennedy's Mechanics of Machinery; Perry's Steam; Herrmann's Graphical Statics of Mechanism; Trautwine's Pocket Book, and Searles' or Henck's Field Book.

SCHOOL OF PHYSICS.

In the absence of a professor for this very important school, the advanced work of the department is carried on by the Professor of Engineering, while the lower is done by Mr. Wilkins.

In the Preparatory department one year's work is given to Elementary Physics. The class meets five times each week throughout the session. The object of the work done here is to furnish the student with an introduction to Modern Physics, and to acquaint him with its methods of investigation. With the design of laying a thoroughly scientific basis for the course, a large space is given to the cardinal doctrines of motion, force, energy, and to their applications in the pressure and motion of visible masses.

With this preparation the student proceeds to the subject of Molecular Physics, embracing sound, light, heat and electricity. Throughout the course the laws of motion and force are kept steadily in view, and an attempt is made to exhibit the evidence daily becoming stronger and clearer, showing that the entire body of physics is a coherent and harmonious system of mechanical truth.

In the school proper there are three classes in physics, extending through three years of progressive work.

JUNIOR CLASS.

The work of this class covers the same ground as that of the Preparatory Class. The treatment is wider and deeper. The popularization of the subject is now laid aside for the spirit of investigation, and Elementary Physics is gone into more extensively and a larger knowledge of pure mathematics required of the student. Students having a working knowledge of Trigonometry and Analytical Geometry take this class without having previously had the lower one. It is, however, advisable to take the two together.

INTERMEDIATE CLASS.

This class begins with the study of mechanics, reads some such text-book as Bowser's during the first half year. This is all that is required of engineering students. Special students in physics then read Statics (Todhunter or Minchin), Kinematics (Minchin), Dynamics (Williamson, Prie, Routh.)

SENIOR CLASS.

The work of the preceding class may be extended into this year, or the student may devote himself to the mathematical treatment of one or more of the following subjects: Sound, light, heat, electricity, elasticity or the motion of fluids.

It is to be hoped that the next Legislature may appropriate sufficient funds for the purpose of erecting a physical laboratory, a feature much needed by the institution.

SCHOOL OF ANALYTICAL CHEMISTRY AND METALLURGY.

Prof. W. H. SEAMON.

The courses in this school have been especially arranged to supply the needs of those who wish to prepare themselves for positions as assayers, chemists and mining engineers. Students who are desirous and capable of accomplishing special lines of work may arrange for such courses in analytical chemistry and assaying as are adapted to their special requirements.

Instruction in the following courses is regularly given each session :

1. General Chemistry.
2. Chemical Technology.
3. Metallurgy.
4. Blowpipe Analysis and Determinative Mineralogy.
5. Analytical Chemistry.
6. Assaying.

1. GENERAL CHEMISTRY.—The instruction in this course is communicated to the members of the Junior Class by means of lectures and recitations based upon Watt's edition of Fowne's Chemistry. The course includes the subjects of Chemical Physics, Chemical Philosophy and Inorganic Chemistry, and in addition thereto regular weekly exercises in Stochometry and other problems of a chemical nature. The class meets three times each week throughout the session.

2. CHEMICAL TECHNOLOGY.—The Intermediate Class meets three times each week throughout the session. Instruction is communicated by lectures and recitations based upon Wagner's Chemical Technology. The general principles involved in the smelting and treatment of the ores of the metals are first considered, followed by a description and explanation of the processes employed in the manufacture of acids, salts, glass, paper, mortar, cements and other building materials, sugar, wines, spirits, oils, paints, soaps, bleaching materials, fuels, etc. The school is at present but poorly supplied with the models, drawings and specimens necessary for thorough instruction on the above subjects, but it is hoped that the additions which are constantly being made to its equipment will eventually make it approach to what it should be.

3. METALLURGY.—In addition to the brief course required of the Intermediate Class, the members of the Senior Class meet weekly for the discussion of assigned topics in the metallurgy of gold, silver, copper, zinc, lead and iron. Special topics are assigned each student, upon which he is required to prepare a paper embodying the results of his reading in the authoritative works on metallurgy, with which the library is well supplied; then papers are taken up in class and critically discussed by the other students.

Books of Reference.—Crooke's and Rohrig's, Percey's, Eggleston's and Phillipps' works on Metallurgy, Bell's Iron Smelting, and the transactions of the American Institute of Mining Engineers.

4. BLOWPIPE ANALYSIS AND DETERMINATIVE MINERALOGY.—This class meets regularly three times each week throughout the session for instruction and practice. Previous to beginning regular practice with the Blowpipe each student is required to complete a series of selected experiments designed for preliminary training in chemical manipulation, and to illustrate the properties of the more important chemical elements and the nature of chemical reactions, after which salts, oxides and alloys are given to each student, on whose composition, as determined by blowpipe tests alone, he is required to report. This work is followed by a course of exercises in Determinative Mineralogy.

Text-Book.—Ernis' Blowpipe Analysis and Determinative Mineralogy.

5. ANALYTICAL CHEMISTRY.—This course is begun with a series of selected exercises in Qualitative Analysis. These exercises, at first simple, are made more and more complex as the skill of the student increases. After the student attains sufficient skill to enable him to determine, with a fair degree of accuracy, the composition of substances given him, he is allowed to begin Qualitative Chemical Analysis. In connection with this work the student is required to complete one exercise each week in Qualitative Analysis as long as he remains in the Laboratory.

In order to complete the full course in Quantitative Chemical Analysis, each student must complete satisfactory analyses of the following substances:

(1) Zinc Sulphate; (2) Barium Chloride; (3) Potassium Aluminium Sulphate; (4) Copper Sulphate; (5) DiSodic Phosphate; (6) Strontium Nitrate, (7) Ammonia-Ferric Sulphate; (8) Fluorspar; (9) Manganese Carbonate; (10) Nickel Ammonium Sulphate; (11) Limestone; (12) Galenite; (13) Chalcopyrite; (14) Stibnite; (15) Arsenopyrite; (16) Cerussite; (17) Calamine; (18) Orthoclase; (19) Kaolin; (20) Chromite; (21) Hematite; (22) Cast Iron; (23) Spelter; (24) Lead; (25) Regulus; (26) Blast Furnace Slag; (27) Lead Furnace Slag; (28) Pyrolusite; (29) Bleaching Powder, valuation; (30) Soda Ash, valuation; (31) Coal, proximate, ultimate and heating power; (32) Borax; (33) Beryl; (34) Potable Water; (35) Mineral Water; (36) Guano; (37) Superphosphates; (38) Sugar; (39) Potassium Ferrocyanide.

Applicants for the degree of Bachelor of Science, Mine Engineering, omit all after No. 28.

Text-Books.—Fresenius' Qualitative and Quantitative Analysis.

6. ASSAYING.—The course in assaying begins with the second term, usually about February 1. The work is usually completed in five months.

Special attention in this course is given to the rapid estimation and valuation of ores and furnace products, both by the fire and wet assay.

Fire Assays.—Gold and silver ores, also mill checks, are made the subjects of special study, and assays both by the crucible and scarification methods are required. Lead and copper ores are assayed by fire methods applicable to the ores in question.

Wet Assays.—Volumetric methods are carefully studied and applied to the rapid determination of copper, zinc, iron, etc.

Text-Book.—Rickett's Assaying.

Special students may pursue, at their discretion, the study and analysis of any class of ores or metallurgic products. Young men who have neither the time nor means to spare to take the full Course may accomplish much in the way of chemical analysis and assaying, by devoting their entire time to it during a single year.

All laboratory students furnish their own blowpipes, platinum, crucibles and apparatus, silver and gold solution, and pay for gas and fuel consumed and for apparatus damaged or broken.

A deposit of \$5 per term, covering the value of the apparatus and chemicals issued, is required to be placed in the hands of the Treasurer by each laboratory student. This deposit, less the value of the material consumed, is returned at the close of the year.

THE NEW CHEMICAL LABORATORY.

The new Chemical Laboratory has been in use four years, and has been found satisfactory in every respect. It was planned and built solely with reference to the work in the school, and the entire building is used by the Chemical department.

In this building there are the following departments: The quantitative laboratory; the qualitative laboratory; director's laboratory; lecture room; assay laboratory and weighing room; a quantitative and qualitative evaporating room; preparation room; a supply room and two basement rooms, furnishing accommodations for seventy-five students.

In the construction of this Laboratory no pains were spared to make the assay laboratory complete in every respect. It is located on the first floor, and not in the basement. The reduction furnace as well as the muffle furnaces are the newest and best. The large muffle furnace holds four muffles. An ore crusher and pulverizing plate, with other facilities, are provided for the use of students.

Facilities for securing heat, light and ventilation are very perfect; ample provision is also made for carrying off foul and dangerous gases. All parts of the building are thoroughly and judiciously equipped; nothing has been left undone to make this laboratory one of the most complete in the country. Gas and water are supplied to each table.

The Laboratory contains, in addition to a large assortment of the apparatus regularly and ordinarily met with in well-equipped institutions, one of Becker's Lithological Microscopes, Contact and Reflecting Goniometers, Dynamo for experimental work in Electrolysis, and other valuable pieces of apparatus for work and research.

The Chemical Laboratory is open to students for work, daily, from 8 a. m. to 5 p. m.

SCHOOL OF MINERALOGY AND GEOLOGY.

The instruction on these subjects is communicated to the members of the Intermediate classes.

Models, diagrams and natural crystals are used in imparting a knowledge of the principles of Crystallography. Systematic Mineralogy is taught in conjunction with exercises in Determinative Mineralogy.

In addition to the usual course in Physical Geography, Dynamical, Structural and Historical Geology, special attention is given to Chemical and Economic Geology. The course of instruction embraces the origin of vein stones and ore deposits, mineral waters, coal, petroleum and natural gas.

SCHOOL OF MATHEMATICS.

Prof. RICHARDS.

Great importance is attached to the study of Mathematics wherever it forms a part of the curricula. The school offers beyond the Preparatory Course (p. 99,) which completes Algebra and Geometry, three years' work, different amounts of which, as will be seen by the subsequent statements, are required in different

courses. In order to enter the Junior class, which begins with Trigonometry, an examination in Algebra and Geometry is required of candidates who have not completed those subjects here. No Mathematics beyond this is required in Course IV, while the first year's work of the General Scientific Course VI includes a review of the Mathematics of the Senior Preparatory. In the Engineering Courses the ultimate intention of the student is kept prominently in view, and such points as have an especial bearing upon his technical work are emphasized as occasion may suggest. The tendency, however, too frequently observable in technical schools, to cramp the Mathematical instruction within the limits of a meager preparation for professional work, is avoided, and the treatment of each subject is, in general, designed to be as broad and full as may be in the allotted time.

At the same time that the facts are taught, the utility of mathematical study as a mental discipline is duly recognized, and an effort is made to promote habits of exact, logical reasoning and to stimulate originality and independence of thought.

The Junior class meets five times a week, the Intermediate and the Senior each three times.

At each meeting the class is examined on matter previously assigned, and, when expedient, explanations of the text and supplementary lectures and notes are given. The student is constantly exercised in work at the black-board, reproducing demonstrations and applying demonstrated principles to the solution of special examples.

JUNIOR CLASS.

The Junior class studies Trigonometry, Plane and Spherical, throughout the first half of the year. The class is thoroughly drilled in the Fundamental Definitions and Formulæ. The construction and use of Logarithmic tables are taught, and numerous examples in the solution of triangles, involving the use of Logarithms, are given. Occasionally actual heights and distances are required to be calculated by Trigonometric methods.

The second half of the year is taken up with the study of the Conic Sections and a few of the Higher Plane Curves.

Text-books.—Snowball's Trigonometry (Plane and Spherical), Bowser's Analytic Geometry (with supplementary notes.)

For Reference.—Todhunter's Plane and Spherical Trigonometry, Puckle's Conic Sections, Todhunter's Conic Sections, Searle's or Henck's Field Book, Christie's Math. Ex. Questions.

This class is uniformly required in Courses I, II, III, V and VI. It will include selected portions of some of the following subjects: Projective Geometry, Theory of Equations, Determinants, Differential Equations, Quaternions.

Text-books.—Cremora's Projective Geometry, Todhunter's Theory of Equations, Muir's Theory of Determinants, Forsyth's Differential Equations, Kellard and Tait's Quaternions.

Lectures on the History of Mathematics are given during the year.

An excellent collection of the chief works on Mathematics in English, French and German, which is contained in the Library, affords the student an opportunity of extending his research at will.

INTERMEDIATE CLASS.

The class begins with Analytic Geometry of Three Dimensions, studying only surfaces of the second degree—the conicoids. The Differential Calculus is then taken up, and the principles arrived at are applied in the development of functions,

the solution of problems of maxima and minima, the investigation of the properties of curves, and the tracing of curves from their equations. In the Integral Calculus, the elementary formulæ of integration are developed and applied to numerous examples, and considerable attention is paid to the use of Definite Integration in the rectification of curves, the quadrature of surfaces and the cubature of volumes.

Text-Books—Venable's Notes on Solid Geometry, Williamson's Differential Calculus, Williamson's Integral Calculus. For reference—Todhunter's and Salmon's Mathematical works and the Mathematical articles in the Encyclopædia Britannica.

The above is required in courses II, III and V. For students of Mining Engineering (course I) a briefer treatment of the same subjects extending through one term is given. This will include such a short discussion of Analytic Geometry of Three Dimensions as is found in Bowser's An. Geometry, and in Calculus some such work as Taylor's Elements of the Calculus, or notes by the professor.

SENIOR CLASS.

The work of this class is designed only for students who are taking the special course in Mathematics and Physics (V), and such others as may wish to extend their Mathematical studies beyond the usual under-graduate range. The course will be susceptible to a certain amount of variation from year to year, at the professor's discretion, to meet the needs and accord with the purposes of the applicants.

ACADEMIC COURSE.

Professor DRAKE, and Professor WILKINS.

The following Academic Course of study was established in pursuance of an act of the Legislature of Missouri, 1887. It is designed to make the course equal in every respect to those offered at the best academies. As now arranged it will commend itself especially to young men who wish to fit themselves for successful business or professional life, and to teachers who wish to prepare for the higher work in their calling.

LANGUAGE, LITERATURE AND HISTORY.

GERMAN.—The course extends through two years, and consists of exercises in translation and conversation, and of a study of the gems of German literature. An effort is made, first of all, to give the student a thoroughly practical knowledge of the language. In addition to this, technical students may acquire such facility in translation as will enable them to read German scientific works in the original. The excellent mental discipline that may be derived from the study of a foreign language, and the great aid that such study may afford to the understanding of one's own language, is not overlooked.

LATIN.—The course comprises Dr. Smith's "Principia Latina," three books of Cæsar's Commentaries, and three books of Virgil's *Æneid*. The design is to give the student a thorough knowledge of the paradigms, the main principles of Latin construction, and as much facility in translation as may be needed for practical and professional purposes. The Allen and Greenough series of text-books is used.

ENGLISH GRAMMAR.—A familiarity with forms and with principles of construction is insisted upon. Written exercises are required daily, from the belief that

painstaking practice under proper supervision is the best, if not the only, means of acquiring facility in the use of good English.

Text-book.—Harvey's Grammar.

COMPOSITION AND RHETORIC.—It will be seen that this subject follows immediately, as it naturally should, upon that of Grammar. The student is required to practice letter writing at the very beginning of the work. From this style of composition to others, the steps are taken with ease. Instruction is given with a view to practical results; it is designed not only to impart a knowledge of principles but also to develop a facility in the application of them.

Text-Book.—Hill's Elements of Rhetoric and Composition.

ENGLISH LITERATURE.—An attempt is made to lead the student to form a correct estimate of the literary value of English productions, and also to direct his attention to the peculiar social and political conditions of which the literature of any particular period is an expression. In this regard, this course and that in English history are made to supplement each other. Time is given to a study of the masterpieces from Chaucer's time to the present, and to a perusal of standard authorities on the literature of the language. The library is well supplied with works of reference.

Text-Book.—Shaw's History of English and American Literature.

ENGLISH HISTORY.—It will be seen that this subject and that of English Literature are pursued during the same term. The two are so intimately associated that the importance of this arrangement can hardly be overestimated. An effort is made to present the subject of English History "in a manner that shall illustrate the great law of national growth, in the light thrown upon it by the foremost English historians." The library contains the works of many of the leading authorities on this subject.

Text-book.—Montgomery's "The Leading Facts of English History."

GENERAL HISTORY.—It is designed to give the student a knowledge of the outlines of the world's history that may serve as a good foundation for further historical and literary work.

Text-book —Myers' General History.

AMERICAN HISTORY.—An attempt is made to impart a knowledge of the causes and effects of the important events of history rather than to fill the mind of the student with an undigested mass of detail. Especial attention is given to the history of our country under the constitution. The drawing of historical maps, recitations from topics assigned, and frequent written reviews, are important features of the work.

Text-book.—Barnes' Brief History of the United States.

CIVIL GOVERNMENT.—The text-book now in use (Young's Class-Book) gives an analysis of the constitution of the United States, presents a comparative view of the different State governments, treats of county and township organization, and affords an acquaintance with such principles of law as are involved in ordinary business transactions.

POLITICAL ECONOMY.—Practical exercises constitute an important feature of the text-book used. No attempt is made to inculcate any particular economic doctrine, but it is sought to give the student such an understanding of the principles of the science that he may apply them intelligently to the solution of such questions as may come under his consideration.

Text-book.—Chapin's First Principles of Political Economy.

MATHEMATICS.

Profs. RICHARDS and WILKINS, and Mr. DEAN.

The Academic course in Mathematics begins with higher arithmetic and is continued through Algebra and Geometry. To Arithmetic one term is devoted, to each of the last two. Students who can produce satisfactory evidence of a sufficient knowledge of Arithmetic will not be required to pursue that study. The object of the course is to give the student a comprehension of the principles involved in the elementary branches and a thorough acquaintance with their immediate application. The solution of original problems, so valuable both as an exercise and a test of acquirement, is made a prominent feature of the course.

In Arithmetic the vital principal and not the mere mechanical rule is what is sought to be inculcated, and the working of examples is a means, not an end. Incidentally, short methods of multiplication and division are introduced and insisted upon. In Algebra, the course begins with the fundamental operations and extends through Quadratic Equations and the Progressions. The class in Geometry completes the usual course in old Geometry, Plane and Solid.

Each class meets daily (five time a week) for one hour. The text-books and scheme of work are as follows:

FIRST YEAR.

First Term.—Arithmetic, Barnes' National.

Algebra, Wells' Academic to Simple Equations containing more than one Unknown.

Second Term.—Algebra, Wells' Academic, completed.

SECOND YEAR.

First Term.—Geometry, Wells' Plane and Solid, first four books.

Second Term.—Geometry, Wells' Plane and Solid, completed.

The preparation necessary for this course is a good knowledge of Arithmetic to Percentage: at the same time, some acquaintance with Algebra will greatly facilitate progress.

SCIENCE.

BOTANY.—The course comprises the elements and principles of descriptive and systematic Botany, together with occasional lectures on the economic uses of various plants. The student is required to begin the analysis of plants as soon as they begin to bloom in the spring, and to continue analyzing till the end of the term. Frequent botanical excursions by the class are insisted on for the purpose of familiarizing the student with the haunts and habits of all the common plants of the vicinity.

Text-Book.—Gray's School and Field Book.

CHEMISTRY.—The design of this course is to acquaint the student with the most important facts and principles of the science without going into minor details. Instruction is given by lectures, illustrated by means of experiments, and by recitations based upon the subject-matter contained in Norton's Elements of Chemistry, revised edition. The class meets five times each week throughout the second term.

PHYSIOLOGY.—It is aimed to make the instruction in this branch as practical as possible, and to lead the student to obey the injunction "Know thyself." Hints on Hygiene are given, also rules for action in cases of emergency.

Text-Book.—Steele's Hygienic Physiology.

PHYSICS.—In this course the object constantly held in view is to present simply and plainly the fundamental truths of Natural Philosophy; to define clearly the nature of force and of motion, and the laws which they obey; and to teach the student to apply these laws to the solution of such simple problems of statics and dynamics as relate to common and familiar phenomena. The subjects of sound, light, heat and electricity are introduced upon a scientific basis, and are illustrated throughout the course by experiments. The department is supplied with apparatus of all kinds necessary for this purpose. For academic students the course extends through the first term of the second year.

PHYSICAL GEOGRAPHY.—In this branch attention is directed to the causes of natural phenomena. Meteorology and the signal service receive special attention.

Text-Book.—Guyot's Physical Geography.

BOOK-KEEPING.—This study is not required, but will be taught upon the application of at least five students for instruction therein. The course comprises principally Double Entry. Various kinds of business are represented, and all the modern conveniences and auxiliaries are explained and used. The student is required to finish at least six different sets of books. Those who complete these before the end of the term will be furnished with abundant material for further practice.

PREPARATORY COURSE.

This course of study is maintained for the benefit of those students who find it necessary to give themselves special preparation for the advanced courses. The completion of this course admits the student to any of the advanced courses without examination.

CHEMISTRY.—This course is intended to prepare Technical students for Laboratory work, which begins in the second year. Norton's Elements of Chemistry, revised edition, is the text-book used. The class meets five times each week.

PHYSICS.—In this class, which meets five times each week throughout the year, the foundation is laid for the course in Mechanics of the Technical department. The fundamental ideas and laws of force, motion, energy and work are dwelt upon at length, and great care is taken to convey to the student correct and sound notions on these important points. The subjects of sound, light, heat and electricity are then taken up, the laws which they obey given and explained simply and clearly. A prominent feature of the course is experimental illustration, for which purpose the equipment in apparatus is excellent.

MATHEMATICS.—A thorough knowledge of elementary Algebra and Geometry is absolutely essential to any successful prosecution of the higher branches of Mathematics, and this course is framed to give those who are insufficiently prepared in these subjects an opportunity to obtain the requisite acquaintance with them. The studies of the First Year and the text-books used are the same as those already laid down in the Academic department (p. 11). The special feature of the second year's work is an extended course in Algebra. This will include a hurried review of the elementary processes, a wider discussion of problems leading to equations with the interpretation of their results, Theory of Exponents, Surds, Imaginaries, the Progressions, Permutations and Combinations, Binomial Theorem, Series, Logarithms, Theory of Numbers, with an introduction to the Theory of Equations.

Text-Book.—Todhunter's Algebra for Schools and Colleges, with lectures.

At the same time, the class takes a thorough course in the old—Euclidian—Geometry, with numerous original exercises. *Text-Book*, Wells' Plane and Solid Geometry.

This is recognized as an important period in the student's work, and every effort is made to have him acquire that firm basis without which his subsequent superstructure cannot be stable. His attention is called to the logical processes involved in the demonstrations, and an attempt is made to have him apply the same rigorous methods to his own thought. Principles learned are constantly illustrated and impressed by requiring their application to the solution of problems. Incidentally the student is acquainted with the noteworthy facts in the origin and development of the subject which he is studying.

GENERAL INFORMATION.

BUILDINGS AND EQUIPMENTS.

The buildings of the School of Mines are situated in the most elevated part of the city of Rolla. They are substantial brick structures, well ventilated and lighted, and heated by the best furnaces manufactured. The main building has recently been painted and kalsomined throughout, and the laboratory, one of the most complete in the country, has been in use but four years.

The different departments of the school are well supplied with apparatus. Several hundred dollars have been expended this year in the purchase of instruments and apparatus for the Engineering and Chemical departments, and further purchases will be made as additional needs are felt and the financial condition of the school will allow.

The last General Assembly appropriated five thousand dollars to the School of Mines for a mess club-house. The building is now completed and contains commodious and comfortable rooms for thirty young men. The dining hall and culinary department accommodate twice that number. The students in the building form themselves into a club, and employ their own caterer. In this manner it is believed they will be able to board themselves at comparatively low cost.

Students wishing to engage rooms in the club building for the session of 1890-91, should do so before September 1, 1890, as the supply of rooms will soon be exhausted. Two students occupy one room. Students engaging rooms on or before September 1 should send \$5 to the treasurer of the college in order to secure assignment to room. This will be refunded on occupation or failure to do so, and is merely required as evidence of good faith in requesting the reservation of a room.

The club will be organized immediately at the beginning of the session.

LIBRARY.

The library contains 2,100 volumes. There have recently been added about 400 volumes on engineering, mathematics, chemistry and metallurgy. The library is now supplied with the latest works on these subjects, and any student who may wish to pursue an extended course of reading in connection with his class work has here an ample opportunity. There are also the standard works in English and American poetry, fiction, biography and history, provided with especial view to the needs of academic students. About twenty engineering, mathematical and chemical journals, domestic and foreign, are kept on file for the use of Faculty and students.

The library is open at regular hours, and all students of the institution may use the books, under certain regulations.

EXAMINATIONS.

Students applying for the degrees led to in courses I to V inclusive, must stand examination on the elements of algebra and geometry before being admitted to the work of those courses.

This examination is only intended to test the student's fitness for this advanced work. No entrance examinations are held for admittance to the School of Mines.

Besides the daily oral examination upon the previous lecture, two general written examinations of each class are held during the session, which every member is required to stand. The Intermediate examination occurs near the middle of the session, and is upon the subjects of instruction of the first part of the course. The final examination occurs near the end of the session, and is upon the subjects of instruction of the second part of the course only, or upon those of the entire course. These examinations are conducted in writing. The questions have numerical values affixed. If the answers at any general examination amount to three-fourths of the aggregate value of the questions, a distinction is awarded to the student, and the fact is published at the close of the session.

Examinations for proficiency or for graduation coincide with the Intermediate and final examinations.

The written examinations are conducted in each school by the Professor. They are sufficiently comprehensive and difficult to render it impossible for a student, without steady diligence, to attain a distinction, and candidates for proficiency or for graduation are subjected to searching interrogations on the details as well as on the general principles of the subject, and are expected to be accurately versed in all matters treated in the lectures and correlative text. Moreover, the student's command of English and his standing at both daily and general examinations are taken into account in estimating his qualification for the certificate or diploma.

DEGREES.

A certificate of distinction is conferred on one who has attained three-fourths of the value of the questions at an intermediate or a final examination. For the degrees of Proficient or Graduate an equal or higher standard is demanded; these degrees, which are conferred only on examination, are as follows:

UNTITLED DEGREES.

1. A Certificate of Proficiency is conferred on one who has passed examination on any of the following special courses: Geology and Mineralogy, General Chemistry, Fire Assaying, Botany and Zoology, Elementary Physics, Geodesy and the Preparatory course.

2. A Diploma of Graduation is conferred on one who has passed examination on any of the following general courses: Mathematics, Physics, Analytical Chemistry, Engineering, Assaying and the Academic course.

SCIENTIFIC DEGREES WITH TITLES.

1. The degree of Bachelor of Science in Mathematics and Physics is conferred upon one who has passed examination on all of the subjects of instruction in the course of Mathematics and Physics.

2. The degree of Bachelor of Science in Chemistry is conferred upon one who has passed examination on all of the work of the Special Chemical course.

3. The degree of Bachelor of Science in General Science is conferred on one who has passed examination on all of the prescribed subjects of instruction in the General course.

PROFESSIONAL DEGREES WITH TITLES.

1. The degree of Bachelor of Science in Civil Engineering is conferred on one who has passed examination on all of the subjects of instruction in the Civil Engineering course.

2. The degree of Bachelor of Science in Mining Engineering is conferred on one who has passed examination on all of the subjects of instruction in the Mining Engineering course.

3. The degree of Bachelor of Science in Mechanical Engineering is conferred on one who has passed examination on all of the subjects of the Mechanical Engineering course.

4. The degree of Civil Engineer, Mining Engineer or Mechanical Engineer is conferred on one who, having graduated in Civil, Mining or Mechanical Engineering and received the Bachelor's degree therein, has identified himself with the profession during a period of not less than three years, and during that time has demonstrated his fitness for his chosen profession.

COMMENCEMENT.

The Annual Commencement exercises are held in the Assembly room, at the close of the work in June. The exercises consist of an address by some prominent speaker, the conferring of degrees and granting of diplomas by the Director, and an essay or oration by some member of the graduating class.

Last year the address was delivered by Judge J. L. Thomas, of DeSoto, Mo.

EXPENSES.

The necessary expenses for the session of nine months in the School of Mines are as follows:

Matriculation—payable on entrance.....	\$15
Library fee—payable on entrance.....	5
Board (estimated) including fuel, washing, lights, from.....	95 to 135
Total.....	\$115 to \$155

The cost of books and stationery (too variable to be introduced into a general estimate) may be assumed to average \$10 during the session.

All laboratory students furnish their own blowpipes, platinum, silver and gold solutions, crucibles and apparatus, and pay for gas and fuel consumed and for apparatus damaged or destroyed. A deposit of five dollars per term, covering the value of the apparatus and chemicals issued, is required to be placed in the hands of the treasurer by each laboratory student. This deposit, less the value of material consumed, is returned at the close of the year.

It is believed that mess-club students will be able to cover the expenses of boarding, lodging, washing, lights and fuel with ten dollars per month; students boarding in the city pay from twelve to fifteen dollars per month.

An abatement of one-half the fees for matriculation and library is made to students who enter after the first of January.

MONTHLY REPORTS.

Regular monthly reports are sent to the parent or guardian of each student, showing the student's grade in scholarship for the month, and giving such other information in regard to his progress, attendance, etc., as may be thought to be of interest. The attention of parents and guardians is particularly called to these reports.

The Missouri School of Mines now offers advantages which it has not been able to offer before in the way of accommodation and a thoroughly organized system of scientific work. The increase in the number and grade of its students the past two years is evidence of a higher appreciation of its work in both Missouri and neighboring states. Every effort is being put forth by all connected with the institution to make it fulfill the purpose of its establishment : *i. e.*, to furnish thorough instruction in Mechanical, Mining and Civil Engineering, and to fit young men of Missouri for the industrial pursuits.

SCHEME OF LECTURES, PROFESSIONAL COURSES.

	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
9-10	Jr. Chemistry. Int. Eng.	Sr. Metallurgy. Int. Eng.	Jr. Chemistry. Int. Eng.	Sr. Metallurgy. Int. Eng.	Jr. Chemistry. Int. Eng.
10-11	Jr. Math. Int. Chem. Tech. Sr. Civil Eng.	Jr. Math. Min. and Geo. Sr. Mining Eng.	Jr. Math. Int. Chem. Tech. Sr. Civil Eng.	Jr. Math. Min. and Geo. Sr. Mining Eng.	Jr. Math. Int. Chem. Tech. Sr. Civil Eng.
11-12	Jr. Eng. French. Int. Math.	Jr. Eng. French. Sr. Math.	Jr. Eng. French. Int. Math.	Jr. Eng. French. Sr. Math.	Jr. Eng. French. Int. Math.
2-4	Laboratory.	Drawing. Field Work.	Laboratory.	Drawing. Field Work.	Laboratory.

TIME-TABLE FOR THE ACADEMIC AND PREPARATORY COURSES.

FIRST TERM.

9-10.	10-11.	11-12.	1-2.	2-3.	3-4.
Latin, (First year.)	English Literature.	U. S. History.		Latin, (Second year.)	English History.
German, (First year.)	Arithmetic.	Physics.		German, (Second year.)	English Grammar.
Algebra, (Second y'r.)					Geometry.
Algebra, (First year.)					

SECOND TERM.

Latin, (First year.)	Civil Government, (Half hour.)	General History. Physical Geography. (Half hour.)	Book-keeping.	Latin, (Second year.)	Rhetoric.
German, (First year.)	Political Economy, (Half hour.)	Physiology, (Half hour.)		German, (Second year.)	Botany.
Algebra, (Second y'r.)	Physics.	Chemistry.			Geometry.
Algebra, (First year.)					

SCHEME OF EXAMINATIONS.

INTERMEDIATE EXAMINATIONS FOR 1891.

Algebra, Junior Engineering, Mineralogy and Latin.....	Monday, January	26
Metallurgy, German, English Literature and Arithmetic.....	Tuesday, “	27
French, General Chemistry, Chemical Technology and His- tory.....	Wednesday, “	28
Intermediate Engineering and Geometry.....	Thursday, “	29
Junior Mathematics and Physics.....	Friday, “	30
Intermediate Mathematics, Zoology and Senior Engineering.....	Saturday, “	31

FINAL EXAMINATIONS FOR 1891.

Latin.....	Monday, June	1
Metallurgy, German, Civil Government and Political Economy..	Tuesday, “	2
General Chemistry, French, Chemical Technology and History...	Wed'sday, “	3
Intermediate Engineering, Geometry and Physical Geography....	Thursday, “	4
Junior Mathematics, Physics, Rhetoric.....	Friday, “	5
Intermediate Mathematics, Senior Engineering. Botany and Phy- siology.....	Saturday, “	6
Algebra, Junior Engineering and Geology.....	Tuesday, “	9

CALENDAR.

1890.

June 12, Thursday, 10 a. m.....	Annual Commencement.....
September 15, Monday.....	First Term begins.....
September 15 and 16.....	Entrance Examinations.....
December 19, Friday.....	Christmas Holidays begin.....

1891.

January 6, Tuesday, 9 a. m.....	Exercises resumed.....
January 26, Monday.....	Examinations begin.....
January 31, Saturday.....	Examinations close.....
February 3, Tuesday, 9 a. m.....	Second Term begins.....
June 1, Monday.....	Final Examinations begin.....
June 9, Tuesday.....	Final Examinations end.....
June 11, Thursday, 10 a. m.....	Annual Commencement.....

XVIII. SCHOOL OF ENGINEERING,

M. M. FISHER, D. D., LL. D.,
Chairman of the Faculty.

THOMAS J. LOWRY, S. M. C. E., DEAN,
Professor of Civil and Topographical Engineering.

WILLIAM B. SMITH, PH. D.,
Professor of Mathematics and Astronomy.

PAUL SCHWEITZER, PH. D.,
Professor of Chemistry.

LIEUT. B. B. BUCK,
(Detailed from Regular Army,)
Professor of Military Science and Tactics.

ALEXANDER MARTIN, A. M., L. L. B.,
Professor of Law and Contracts.

GEO. D. PURINTON, A. M. PH. D.,
Professor of Economic Botany.

G. C. BROADHEAD, M. S.,
Professor of Geology and Mineralogy.

M. L. LIPSCOMB, A. M.,
Professor of Physics

HIRAM PHILLIPS, TOP'L. ENGR.,
Assistant Professor of Engineering.

HON. VAN COURT YANTIS, M. S.,
Lecturer on Engineering as applied to Transportation (for the session of 1889-90.)

VISITING LECTURERS ON ENGINEERING.

MAJOR CHAS. R. SUTER,
Corps of Engineers of U. S. A.

LIEUT. SMITH S. LEACH,
Corps of Engineers of U. S. A.

NOTE.—These important announcements are made by permission.

GENERAL STATEMENT.

The School of Engineering is designed to furnish the students the means of acquiring a thorough knowledge, theoretical and practical, of those sciences and arts which are playing the most important parts in the development of the material resources of our country, and the advancement of our civilization.

Besides the application of the higher analysis to engineering investigation, the professional preparation of the students comprises the following subjects: The location and construction of roads, railroads, canals and water-works; the surveys and improvement of coasts, harbors, rivers and lakes; the determination of astronomical and geographical co-ordinates on land and at sea; the design and construction of roofs, trusses, girders and suspension bridges; drawing and constructing the various kinds of arches; the design, application and construction of wind, hydraulic and electric motors, dynamos, air and steam engines; blowpipe analysis of minerals and economic geology, mineralogy, chemistry, elementary and applied; the art of war; the preparation of the various kinds of projections and drawings used by the military, topographical, civil and mine engineer, and the selection, tests and application of materials used in construction, and papers and essays on professional subjects.

The sphere of the engineer is so broad and diversified that it is impossible for any one to become proficient in all the various specialties into which the profession has been so divided. To meet the demands for special engineering studies and training from the end of the third year of the studies laid down in the Engineering Synchronistic table (see page 122), four parallel courses have been arranged, so as to allow of option and diversity of special studies. This department will thus foster the development of special fitness in each student, by offering him work in the line of his preferences. These courses are:

I—Civil Engineering.

II—Topographical Engineering.

III—Military Engineering.

IV—Electrical Engineering.

The great subdivisions of engineering which are embodied in these courses are road and railroad engineering, hydraulic engineering, bridge architecture and construction, topographical engineering (and, as prerequisite auxiliaries of these, engineering geodesy and practical astronomy), electrical engineering and military engineering.

The course in civil engineering is designed for those who wish to make either road and railroad engineering, bridge construction or river improvement a specialty.

The course in topographical engineering is arranged for those students who find distasteful the application of the higher mechanics to civil constructions, and who may show, instead, special aptitude for geodetic work and hydraulic engineering, viz.: Trigonometrical, topographical and geological surveying, practical astronomy on land, and the surveys and improvements of rivers, lakes, bays and coasts. Since the U. S. Government began the geodetic, topographical and geological surveys of her territories, and gave fresh impetus, by liberal appropriations, to the surveys of her coasts and the chain of great lakes on her north, there has been an incessant demand for men specially fitted for the important duties of the explorer, astronomer, topographer and geographical engineer. And now that the attention of the nation is turned to surveying and improving the great rivers of the Missis-

ENGINEERING: TABLE OF

	Semester	Hours.	Course in Civil Engineering. C. E.	Hours.	Course in Topographical Engineering. Topographical Engineer.
FIFTH YEAR.	X	III II	Project and Thesis 1-2. Mechanism 1-2. Assaying 1-2. Law of Contracts 1-2. Designing Structures. Hydraulic Engineering (rivers, harbors and water-works.)	VI II	Project and Thesis. Drawing, Room and Field Work. Law of Contracts 1-2. Geodesy. Hydraulic Engineering (rivers and harbors)
	IX	V I IV III II	Hydrographical Surveying 1-3. Logic 1-3—Economic Botany (Timber) 1-3 Steam Engine Framed Structures. Isometric Projection and Stereotomy.	I V VI	Logic 1-3—Field Work 2-3. Navigation, Maritime and Coast Surveying. Triangulation and Topographical Surveying (with plane table, also with transit and stadia.) Magnetic and Meteorological Surveying. Chart Projections 1-2—Colored Topography 1-2.
FOURTH YEAR.	VIII	I III IV V	Map Drawing and Field Work. Shades, Shadows and Perspective, with Draughting. Applied Mechanics (Kinematics and Dynamics.) Topographical Surveying (Transit and Stadia.) Sextant Astronomy 1-4. Work in Testing Laboratory.	I IV V	Map Drawing and Field Work. Shades, Shadows and Perspective, with Draughting. Spherical Astronomy. Hydrographic Surveying 3-4—Sextant Astronomy 1-4.
	VII	III I II IV	Applied Mechanics (Theory of stress and of the strength and elasticity of materials.) Descriptive Geometry and Draughting. Least Squares 1-2—Differential Equations 1-2 Higher Surveying and R. R. Surveying and Engineering.	I II IV	Topographical Drawing and Field Work. Descriptive Geometry and Draughting. Least Squares 1-2—Theory and Adjustment of Instruments 1-2. Leveling and R. R. Surveying.

SYNCHRONISTIC CURRICULA.

Hours.	Course in Military Engineering. Mil. Eng	Hours.	Course in Electrical Engineering. Elec. Eng.
III	Project and Thesis 1-2—Military Law and Law of Contracts 1-2 Military Engineering (Permanent Fortifications, Siege operations and Military mining.) Art and Science of War. Designing Structures.		Thesis 1-2—Law of Contracts 1-2. Mechanics of Machinery. Electric Motors Physical Laboratory (electric testing.)
III II	Ordnance and Gunnery 1-2. Art and Science of War. Field Fortifications. Framed Structures. Isometric Projections and Stereotomy 1-2.	IV II	Steam Engine. Isometric Projection 1-3—Drawing 2-3. Dynamo-Electric Machinery — Electricity and Magnetism (Maxwell.)
I III IV	Map Drawing, Field Work and Sextant Astronomy 1-2. Military Signaling 1-2. Shades, Shadows and Perspective, with Draughting Applied Mechanics (Kinematics and Dynamics.) Topographical Surveying (Transit and Stadia.)	I III	Shades, Shadows and Perspective, with Draughting. Applied Mechanics. Electricity and Magnetism (Maxwell.) Physical Laboratory (electric testing) 2-5. Telegraphs and Telephones 3-5.
III I II IV	Applied Mechanics (Theory of stress and of the strength and elasticity of materials.) Descriptive Geometry and Draughting. Least Squares 1-2—Diff. Equations 1-2. Tactics 1-2—R. R. Surveying and Engineering 1-2.	III I II	Applied Mechanics. Descriptive Geom. and Draughting. Least Squares 1-2—Differential Equations 1-2. Thermo-Chem. 2-5 Thermo-dynamics 3-5.

The first three years of the courses in Civil, Topographical and Military Engineering.		The first three years of the course in Electrical Engineering.	
Sem'r.	Hours.	Hours.	
THIRD YEAR.	VI.	III.	Calculus..... 3 Mechanics..... 3 Advanced Physics..... 4 Physical Laboratory..... 2 Applied Chemistry..... 5 Drawing..... 3
		V.	Calculus..... 3 Mechanics..... 2 Physical Theory..... 3 Chemical Laboratory..... 5 Roads, Streets and Pavements and Field Work..... 5 Drawing..... 2
	IV.	VI. IV.	Analytical Geometry and Determinants..... 5 Mineralogy..... 3 Economic Geology..... 3 Chemical Laboratory—Qualitative Analysis..... 5 Drawing..... 4
SECOND YEAR.	III.	VI. II. III.	Analytical Geometry and Determinants..... 3 Geology..... 3 Physical Laboratory..... 2 Chemical Theory..... 3 Chemical Laboratory..... 3 Land Surveying and Navigation..... 5 Drawing..... 2
	II.	V. II. IV.	Geometry, Trigonometry and Algebra..... 5 Chemistry..... 5 *German, 5, or French, 4..... 5 *English Composition and Rhetoric..... 5 Drawing..... 3
FIRST YEAR.	I.	V. II. IV.	Geometry, Trigonometry and Algebra..... 5 Physics..... 5 *French, 4, or German..... 5 *English Composition and Rhetoric..... 5 Drawing..... 3

*Either two Semesters of German or two Semesters of French are required.

NOTE.—While the student is pursuing the first three years of the Engineering courses, the tuition is \$20 per year: the last two years, \$40 per year.

Mississippi basin, a broad field, inviting the labor of topographers, hydrographers and hydraulic engineers, is open at our doors. To provide for these and similar demands, the course in topographical engineering was instituted, and is now in full operation. The facilities for instruction in this course are very complete. Students taking the course in topographical engineering will have an opportunity and be required to perform work as accurately as is done in the actual details of the U. S. Coast Survey, the geodetic surveys of our lakes and territories and the surveys and improvements of our rivers, lakes, bays, harbors and coasts by the U. S. A. Engineer Corps. The course in Military Engineering is essentially that of the U. S. Military Academy at West Point.

The course in Electrical Engineering is intended to meet a steadily growing want created by the rapid extension of electric lighting, the telephone and the electric transmission of power. With the appropriation made by the Thirty-fourth General Assembly were purchased a few more instruments for electric testing, and these, with the electric apparatus in the Physical Laboratory and the plant of two Edison dynamos and an Armington & Sims engine, enabled us to establish this course.

We especially ask the attention of those young men who desire to fit themselves for the duty of county surveyor and of government land surveyor, to the fact that every effort will be made to enable them to accomplish this within a short time. To this end, at the beginning of each year, a class will be organized and instructed (theoretically and practically) in land surveying, with compass, theodolite and solar compass; in the surveys for, and location and construction of roads, and in the surveys for, and location of, and in the designs for, and construction of, wooden bridges, and in locating and surveying base lines, meridians, and township and section lines, and in retracing old government, township and section lines. This class will also be instructed in drawing. This course can be completed in thirty-eight weeks. A certificate of proficiency will be given those who complete this course.

The Professor of Engineering is the sworn deputy of the county surveyor of Boone for the corporate limits of the city of Columbia, and hence, the surveys he here makes are legal; they are accurately made, carefully computed and platted, and properly recorded on the records of the county. The fees received for this work are regulated by statute (see General Statutes of Missouri.)

These surveys not only serve as means of instruction for the Surveying and Engineering classes, but they are also a source of financial aid to the students. The students assisting in these surveys will receive the fees provided by law for such work.

The methods for instruction embrace the use of text-books, which are changed from time to time, lectures (illustrated by diagrams of the great engineering and surveying operations and results of the present age) and actual field and observatory practice. And recognizing the truth of what Dr. Laws so well expresses, that "the primary aim of the academic schools of science and language is culture; that of the professional schools is practice; that self is the end of culture, but self is the instrument of practice," the field and observatory practice and work in the chart room are made to bear a large proportion to the theoretical instruction. The data thus obtained by actual field surveys and practice in the observatory serve both to elucidate the principles and formula, and insure their ready and accurate application in professional life.

In addition to the field, class-room, observatory and chart-room work, the engineering students have access from 8 a. m. to 5 p. m., each day, except Sunday, to the University library, and also to the private library of the Professor of Engi-

neering, which together contain nearly all the standard works on surveying, engineering, geodesy and astronomy. These they are expected to make constant use of, and thus enlarge, by careful reference and judicious reading, their acquaintance with the subjects presented in the text-books and lectures.

We desire to call special attention to the increased facilities which this University now enjoys for teaching astronomy. It offers facilities for instruction in theoretical and practical observatory and sextant astronomy, equal to any in the United States. The most refined astronomical methods of the U. S. engineer corps and the U. S. coast survey are taught by the head of the Mathematical department, assisted by those who have had years of instruction and training at West Point on the coast survey. With these facilities, young men can prepare themselves for efficient service on the astronomical parties of the great geodetic surveys of our states and nation; and can also acquire the nautical astronomy required in navigating a ship.

The attention of those interested in military engineering is asked to the report of Prof. Buck, and also to the Engineering Synchronistic table.

The attention of those interested in engineering and astronomy is especially asked to the reports of Professors Schweitzer and Smith (see pages 46 and 42.)

Our present professional force, and the increased facilities in apparatus and room furnished the department of Chemistry, Physics, Geology, Mathematics, Astronomy and Engineering, by the enlightened liberality of the Thirty-second, Thirty-third and Thirty-fourth General Assemblies, are such that we can now offer a complete theoretical and practical treatment of the above great subdivisions of Engineering, Surveying and Astronomy.

During the summer of 1881 we visited the U. S. Military Academy, the Rensselaer Polytechnic Institute, School of Mines, Columbia College, Stevens Institute of Technology, Massachusetts Institute of Technology, Lawrence Scientific School, West Point, Troy, Sheffield Scientific School, the U. S. Naval Academy, and Washington University, almost all of the first-class Engineering Schools in the United States; and had the pleasure of gaining an insight into the internal workings of these schools: *i. e.*, as to what they were doing, and how. And after a careful survey of the field of American engineering, and a critical consideration of the work of our co-laborers in these schools, we found reason for few and very slight changes, indeed, in our courses.

THE TESTING LABORATORY.

With the money appropriated for this Engineering school by the Thirty-fourth General Assembly, the University has purchased a Testing machine of Tinus, Olsen & Co., of Philadelphia, Penn. This machine is now in successful operation in the basement of the west wing of the University. The capacity of this machine is 200,000 pounds; and it is arranged to be operated either by power or by hand. It is adapted to testing materials in compression, tension, torsion, shear and cross-breaking; and has an automatic register which records the elastic limit, the breaking stress, and the elongation due to each stress during the entire experiment. This is the first automatic register which has left Mr. Olsen's shop.

This testing machine is expected to serve a three-fold purpose, *viz.*:

First—For the use of the Junior and Senior students, in connection with their studies on the strength and constitution of all kinds of engineering materials, as iron, steel, brass, stone, wood, etc.

Second—To test the materials used in the highway bridges and other public structures in Missouri, and thus protect a too confiding public against the melan-

choly disasters and financial losses which defective building materials too often bring down upon the people of the State.

Third—To ascertain and publish to the world the strength and other qualities of the building stones, woods, iron, etc., of Missouri. This engineering school and the departments of Geology and Chemistry are now actively engaged in collecting specimens of the building stones, irons, coals and woods of every county of the State, and also the estimated quantities of said materials.

These will be tested carefully and conscientiously in the Laboratory and Testing machine, and the results spread broadcast over the United States; thus we hope to assist idle capital to discover the resting places of the undeveloped wealth of this great State. We hope the students and graduates of the University, and especially the county surveyors and engineers of the State, and also the owners of the mines, quarries and woodlands of Missouri, will lend us their earnest assistance in securing specimens of the building stones, cements and woods, and also the coals of every county and township of Missouri; the stone specimens should be 4 inch cubes, the specimens of woods one and one-half inches by one and one-half inches by 40 inches ($1\frac{1}{2}$ in. x $1\frac{1}{2}$ in. x 40 in.)

The testing Laboratory also contains Olsen's latest improved cement Testing machine. This is used to test, under varying conditions, the different kinds of hydraulic cements. There is also in the laboratory an engine of 35-horse power which supplies all the motive power necessary for the large Testing machine.

"The James S. Rollins Engineering Scholarship" of \$50 will, on the first day of June of each year, be awarded to that member of the Junior class in Civil Engineering "who shall be adjudged entitled to it by the President and Faculty." For conditions of award see article: "James S. Rollins University Scholarship," (page 138.)

Report.—The following is the report of the Engineering department for the year ending June 5, 1890:

Senior class, Engineers.....	5
Juniors, Sophomores and Freshmen (Engineers).....	33
Total in the Engineering course.....	38
Candidates for certificate of surveyor.....	5
Academic and Law and Medical students who took land surveying.....	9
Academic and Agricultural students who took drawing.....	13
Total number in the Drawing classes.....	41

The classes in topographical surveying and engineering have, by frequent practice in the field, familiarized themselves with the use of the theodolite, sextant, spirit and water levels, leveling rods, chain and compass, and plane-table. And the class in surveying, by frequent practice in the field, have familiarized themselves with the use, manipulation and capabilities of the theodolite, compass and chain, and leveling rods and spirit levels, and the solar compass.

The energy, enthusiasm, painstaking care and accuracy displayed by these classes have confirmed me in the opinion previously formed from observation and experience of seven years with field officers of the U. S. Coast Survey and Navy, that the American mind possesses a fertility of resources, a power of adapting means to ends, and an acuteness of perception, which peculiarly fit it for an observer in the exact arts.

The engineering classes of 1877-78-80 laid an accurate base line and completed a trigonometrical survey of the University campus, horticultural grounds, and a part of the Agricultural farm.

The class of 1890 have measured a base line with steel tape and from it triangulated the Agricultural farm, and to this trigonometrical frame-work have filled the detail topography with stadia and transit platting in five-foot contour lines with great accuracy. This system of triangulation and plane-table topography, thus begun, it is hoped will be gradually expanded till it eventually covers the entire State of Missouri.

This class also accurately mapped, topographically, the suburban grounds of Capt. Rollins and the stock farm of Judge Hinton, and also the grounds of the "Missouri Military Academy" at Mexico, Mo. Topographical surveys, accurately made and neatly platted, have also been made of the grounds of the "Christian Female College," Columbia, Mo., and "Stephens Female College," Columbia, Mo., the State Horticultural grounds, Columbia, Mo., and the Missouri University Club grounds, Columbia, Mo.

With the money appropriated by the Thirty-second General Assembly, this department has purchased 1 plane-table, 1 level, 1 steel tape (from Buff & Beyer,) 1 patent telescope compass (T. F. Randolph,) 1 planimeter, 1 three-arm protractor (Fauth & Co.,) 1 pantagraph.

And with money appropriated by the Thirty-fifth General Assembly, this department purchased 1 transit, 2 surveyor's compasses, 1 prismatic compass, 1 lock hand level, 1 100-foot tape, 1 Philadelphia leveling rod.

The Engineering school has a room fitted up with apparatus for taking copies of drawings by the "Blue Print process."

Drawing has been made a more prominent feature of the course; Warren course in Drawing, and Smith on Topographical Drawing, are used as texts.

The course in Topographical Engineering has been strengthened by giving greater prominence to the subject of Hydrographic Surveying and Hydraulic Engineering.

The wisdom of the Board of Curators in providing an Assistant Professor of Engineering to devote his entire time to work in the Engineering school, is shown in the increased efficiency of the engineering students in drawing-room and field work.

For list of engineering students, see page 25.

The fact that we have been able to secure positions (on the surveys and improvements of the Mississippi and Missouri rivers, on the coast survey, on railroad surveying and engineering parties, on bridge engineering, and on government land surveying parties) for the graduates from this department, has assisted materially in awakening an intelligent interest—a healthy enthusiasm—in the cause of engineering education at this University. And the present revival in the industries which demand engineering and chemical skill has already increased, and promises to further increase, the number of students in this department.

THOMAS J. LOWRY,

Dean of Engineering School.

XIX. MISSOURI STATE MILITARY SCHOOL.

SECOND LIEUT. B. B. BUCK,

16th U. S. Infantry, Professor of Military Science and Tactics.

An officer of the regular army is detailed by the War Department as Professor of Military Science and Tactics to carry out the provisions of the act of Congress of 1862, which, in endowing this and similar institutions, stipulates that military tactics shall be taught.

The military organization of the cadets is as follows:

Staff and Non-Commissioned Staff.

Cadet Captain and Adjutant.....	E. W. Hinton
Cadet Captain and Quartermaster.....	J. H. Coons.....
Cadet First Lieut. and Commissary.....	C. P. Williams.....
Cadet Sergeant-Major.....	S. F. Crecelius.....
Cadet Quarter-master Sergeant.....	T. E. Evans.....
Cadet Color Bearer.....	W. A. Vivion.....

Company A.

Cadet Captain.....	R. S. Brownlee
Cadet First Lieutenant.....	W. M. Banks.....
Cadet Second Lieutenant.....	S. B. Fisher.....
Cadet First Sergeant.....	M. Tomlin.....

Company B.

Cadet Captain.....	R. M. Hockaday.....
Cadet First Lieutenant.....	J. Y. Kerr
Cadet Second Lieutenant.....	C. Hill.....
Cadet First Sergeant.....	H. L. Moore.....

Company C.

Cadet Captain.....	G. C. Pratt.....
Cadet First Lieutenant.....	J. B. Sterling
Cadet Second Lieutenant.....	G. P. Whitsett.....
Cadet First Sergeant.....	J. P. White.....

Company D.

Cadet Captain.....	J. T. Kellar.....
Cadet First Lieutenant.....	J. M. Hubbell.....
Cadet Second Lieutenant.....	C. K. Allen.....
Cadet First Sergeant.....	W. F. Carter

Appointments to office are based on soldierly qualities and attainments.

SUPPLIES.

One hundred and fifty Springfield cadet rifles (breech loaders,) two light 12-pounder bronze guns with carriages and implements, and a limited supply of ammunition, are furnished by the General government.

The Department is in receipt of liberal supplies of ordnance stores from the State.

UNIFORMS.

Uniforms are required to be worn at all drills, and may be worn on all occasions. Arrangements have been perfected by which tailor-made uniforms are supplied to students at an aggregate cost of seventeen dollars (\$17) each, including caps and gloves. It is the intention of the State to supply two complete uniforms to each regularly appointed cadet free of cost.

These suits are of good material, well finished, and are far more economical than ordinary citizen's dress. Many cadets prefer wearing their uniforms at all times, and there is no necessity nor occasion for any other suit. Students are requested to bear this in mind in bringing clothing with them.

INSTRUCTION.

Students desiring to take the degree of Military Engineer will find explanations of the course of study in the report of the School of Engineering.

All the students of the department are required to attend all recitations in tactics and all lectures, and to take a practical course of instruction, which consists of infantry drill in the school of the soldier, company, battalion, skirmish drill and target practice. A separate detachment is also drilled in the manual of the piece and service of the foot-battery.

Lectures on military subjects are given during the winter term to the entire class. Recitations in Infantry and Artillery tactics, and in the elementary principles connected with the art of war, are required during three months of the year. The requirements of the department are so adjusted as to harmonize with the regular academic work of the students.

It is the desire of the present management of the institution that all students should enroll themselves as cadets. The drill is especially valuable to health and personal bearing by counteracting the stooping tendencies which invariably attend desk work and school life, and by developing an erect and soldierly carriage. It is made imperative upon all the students of the department to take the out-door exercise so necessary to their health and physical development, and which students, if left to follow their own inclinations, generally neglect.

During the present school year, 175 students have received instruction in this department.

The following extract from the Militia Law of the State of Missouri, enacted by the last Legislature and now in force, will be of interest to those who desire to receive the appointment as cadet :

* * * * *

Section 5. The Military department of the University of the State of Missouri, as organized under section 1225, Revised Statutes of the United States, and section 7279, Revised Statutes of Missouri, 1879, is created the Missouri State Military School.

Section 6. The corps of cadets at the Missouri State Military School shall consist of one from each Senatorial and Representative district in this State, and shall be actual residents in the district from which appointed, and shall pass the required

examination for admission to the University. Each Senator and Representative of the General Assembly of the State of Missouri shall appoint during the month of August in each year a cadet for such scholastic year.

Section 7. Cadets receiving instruction as provided in the preceding section shall be matriculated in all the Academic departments of the University free from tuition fees, and subject only to the incidental fees and laboratory fees therein provided.

Section 8. The corps of cadets as provided in the preceding sections shall have the military organization prescribed for the National Guard of the State and reckoned a part thereof, and as such entitled to all such provisions as are or may hereafter be made for the National Guard of Missouri. The military government and discipline of the cadets shall be prescribed by regulations prepared by the Faculty of the University and approved by the Governor of the State.

A circular letter of instructions will be prepared and forwarded to Senators and Representatives prior to August 1, 1890, setting forth the conditions of matriculation in the Missouri State Military School, and inviting them to make appointments as provided in this law.

It is desirable that appointments be made by competitive examinations in English and Mathematical studies, since the State, after making liberal provisions, is entitled to the very best material attainable.

All male students of the University not physically disqualified will be allowed, as heretofore, to enroll as cadets, but the State cadets appointed under the above law will be matriculated in all the Academic departments of the University free of tuition charges, and will be provided with the material for uniforms without expense to themselves. A copy of the regulations for the government of cadets will be given to each cadet upon his entrance into the Missouri State Military School. These regulations require cadets to enter and report for duty before September 25 of each year.

B. B. BUCK,
2nd Lieut. 16th U. S. Infantry,
Professor Military Science and Tactics.

XX. SCHOOL OF ART.

Professor ————.

FIRST YEAR.

1.—Recognition, naming and representation of all surface forms by which regular solids are bounded. 2.—Laying out the superficies of solids (developments), and folding of the same. 3.—Carving of solids out of soft substance. 4.—The four free curves of ornamentation. 5.—The drawing of these through fixed points. 6.—Color sensations produced by the mixture of pigments. 7.—Projected shadows of objects. 8.—Action of light upon solids. 9.—Pictorial representation by the students of objects at home—once each week.

SECOND YEAR.

1.—Representation of all the measures of solids by plan drawing. 2.—Plane cuts through them (*section*). 3.—The most important problems of geometric construction. 4.—Representation of projecting and inverted surfaces by gradations of light, in light, shade and shadows. 5.—The finishing forms of architecture. 6.—Surface decoration. 7.—Manifestations of the law of symmetry. 8.—The laws of the beautiful. 9.—Pictorial representation of objects at home—one each week.

THIRD YEAR.

1.—The vanishing points and lines of perspective. 2.—The various means employed for reproducing or multiplying a unit of ornament. 3.—Application of design. 4.—Style in ornament. 5.—Orders of Greek architecture. 6.—Gothic tracery. 7.—Anomalous vagaries harmonized by art. 8.—The line, considered as the only means for the portrayal of motion and emotion. 9.—Pictorial representation of objects at home—one each week.

The expenses incident to this study are :

1. Drawing-book.....	10
2. Package practice paper, per 20 sheets.....	10
3. No. 4 pencil (Anchor 5 cents, Faber 10 cents).....	15
4. Three cakes of water-colors.....	60
5. One box of instruments.....	50
6. Three brushes.....	15
7. Manual, Linear drawing No. 11.....	75
Total.....	\$2 35

The book and paper will, when properly used, last one year; the water-colors from two to three years.

Report.—With the better accommodations in the new editions to the main building, the students of the Art department will enjoy the advantages of drawing from real objects in the class rooms, especially as the appointments of these rooms are much the same as are those of professional art schools.

The following important points cannot be too seriously urged on the attention and consideration of students—whatever be their aim or chosen vocation.

1. Geometry is the foundation of all the Sciences, of the Industries and of the Fine Arts. The Art department deals with Constructive Geometry, which is a practical independent subject that is complete in itself, and without which Analytical Geometry were not. Constructive Geometry is not only the soundest preparation for the study of Mathematics, but it is the complement of the higher branches thereof.

2. Orthographic Projections (plan of working drawings) and Linear Perspective are based on Constructive Geometry.

3. The training of the eye to a correct observation of shapes of relative light or dark, and the exercise of the hand to make correct notations of such, constitute the sum total of free-hand perspective drawing. Of all organs the eye is the most essential in practical life—as it is the most useful. One well-trained eye can direct many skilled hands. Among those that are destitute of one sense, the blind are the most helpless, and must be cared for, either by their relatives or by the State. In the Academic course it is the highest aim to educate the sense of sight. Correct observation, alone, leads to correct imitation, and conversely, correct imitation develops the powers of observation, of understanding, of knowledge.

4. A correct judgment of visual forms and phenomena is impossible without a cultivated sense of color, and hence special attention is given to this subject. Mary D. Livermore says: "To-day an educated sense of color has a commercial value."

5. Of Art forms only such are presented in the Academic course as embody general principles that are active in nature. The most abstract art conception will be utterly void unless it be clothed with the garb of nature to render it intelligible.

6. Form is the language of the Industries. All the sciences are pressed into the service of the Industries. The Industries are the chiefest source of a Nation's wealth—and amongst them Art Industry is the most lucrative, hence the most important. That which distinguishes Art Industry from the Industries in general is Art proper, which enters into it as a necessary ingredient, and therefore it is to be hoped that in the near future the most liberal advantages may be afforded by the University of the people of Missouri to the gifted youth of the State for the pursuit of professional Art study: *i. e.*, Art as a subject for developing the feelings for "the true, the good and the beautiful," to a full consciousness in the minds of individual students, and not to serve as a means for imparting mere mechanical drill in the practice of processes at the expense of Art culture and refinement, and to the utter suffocation of the understanding and of creative growth—and this, not from any ideal, sentimental or visionary notions, but from the practical hard-headed stand-point of dollars and cents.

Every student that is qualified to enter upon the University course—whether he bring to the work of the Art department a conscious predilection (natural talent) or not—will make a progress in the study of Form and Art that is fully commensurate with his efforts. The most faithful student in this, as in any branch of study, will ever achieve the best results.

XXI. COMMERCIAL SCHOOL.

BOOK-KEEPING.

J. P. ROYALL, *Instructor*.

This department has been in successful operation during the past ten years, in charge of J. P. Royall, a practical accountant and an experienced teacher of book-keeping.

The room is handsomely furnished, having been recently supplied with new, large and elegant double desks.

Students of the university are instructed during three-fifths of the semester without any charge. This course will cover fifty-four lessons, and embrace single-entry and double-entry book-keeping adapted to an ordinary wholesale and retail mercantile business, the opening and closing of books, partnership settlements and mercantile forms, including drafts, notes, accounts-current, etc. Those students who desire to pursue this branch further than is provided for without charge, and

who stand well in their other studies, will be permitted to have this subject during the whole semester by paying a fee of ten dollars.

Those who choose to pursue the more elaborate course, or who may study it as a profession, besides being practiced in the before-mentioned work, will be instructed in the shorter methods, and the most modern and approved forms of books in their adaptation to the various kinds of business.

The student does not copy his work from a text-book, nor is he required to study an elaborate treatise on the subject. The teacher has prepared for the student a small manual containing the fundamental rules, definitions and principles, and memoranda embracing a concise history of a series of business transactions, such as occur in a mercantile house, simple at first and gradually becoming more intricate, so that the student is placed in *the actual work of keeping books*; and, after a few weeks of class work, each is required to keep books as if he were alone and the only one doing the work, so that his time is employed in learning *the art of keeping books* rather than in studying the science of book-keeping.

The student is not simply *carried through* a prescribed course, nor is he assisted in work that he can accomplish without aid; but he is exercised in the art of keeping books. Thus his efforts are not superseded by the work of the teacher, but he is encouraged and stimulated to habits of self-reliance, and, when these are attained, he readily becomes a competent book-keeper. The actual work of the counting-house is thus introduced into the school-room.

An opportunity is here offered the students, both ladies and gentlemen, while pursuing their other studies, to acquire, incidentally as it were, a thorough knowledge of this important branch of a practical business education. By diligence the average student may accomplish this work in one semester.

Persons who desire to do so may enter as *special students* in this department without joining other classes in the university, and, by devoting their whole attention to the subject, may acquire in a very short time a thorough knowledge of book-keeping.

EXPENSES.

Tuition Payable in Advance.

For students of the University, two-fifths of the semester..... \$10 00
For persons not connected with the University, one semester or full course.. 30 00

All students must provide themselves with books of instruction, blank books, stationery, etc., which will cost about two dollars.

Report.—The following is the report for the department of book-keeping for the year ending June 5. 1890:

Students were enrolled as follows:

First semester.....	19
Second semester.....	70
Total.	89

The following list comprises the names of students who, having completed the prescribed course, and, having attained a grade of 85 per cent, have been awarded certificates as competent book-keepers:

Bouldin, Ed. S.	Graham, Ben. R.
Burk, James S.	Guenther, Gustave A.
Burkhart, Louis H.	Harlan, Anna S.
Davis, Forest E.	Hartley, Robert L.
Dillard, Lindsay.	Thompson, Thos. W.

The following is a list of students pursuing the more extended course, and who will be entitled to certificates at the close of the current year :

Adams, Minnie.....	Hellyer, Walter T.....
Beazley, Thos. L.....	Kurtz, Russell L....
Blake, Wm. S.....	Mikel, Henry F.....
Britt, Leila.....	Pratt, Geo. C.....
Dorsett, P. H.....	Schooley, F. E.....

Guitar, Odon.

Those who pursue the partial course during three-fifths of the semester and who accomplish a reasonable amount of work for this limited time, are given a passing grade.

J. P. ROYALL, Principal.

UNIVERSITY LIBRARY.

The following is submitted as the Fourteenth Annual Report of the University Library :

	Books.	Pamphlets.
General Library.....	17,269	16,153
Accessions for 1889-90.....	1,479	1,050
Law Library.....	1,980	
Accessions for 1889-90.....	108	
Columbia Library.....	809	
Athenæan Society Library.....	538	
Union Literary Society Library.....	464	
Total.....	22,647	17,203

PERIODICALS PURCHASED FOR CURRENT YEAR.

Academy.	Hebraica.
Academy (London)	Independent (New York.)
Agricultural Science Monthly.	Journal of Education.
Albany Law Journal.	Journal of Hellenic Studies.
American Naturalist.	Journal of Royal Microscopical Society.
American Notes and Queries.	Journal of Society of Natural History.
American Journal of Mathematics.	Journal of Chemical Society (London.)
American Journal of Psychology.	Leslie's Illustrated Weekly.
American Journal of Philology.	Magazine of American History.
American Microscopical Journal.	Medical Journal (New York.)
American Law Review.	Modern Language Notes.
American Geologist.	Nation.
American Garden.	Nature.
Andover Review.	Nineteenth Century.
Annals of Mathematics.	North American Review.
Atlantic Monthly.	Popular Science Monthly.
Bibliotheca Sacra.	Political Science Quarterly.
Century Magazine.	Sanitarian.
Chautauquan.	Scientific American and Supplement.
Chemical News.	St. Louis Republic.

PERIODICALS PURCHASED FOR CURRENT YEAR—Continued.

Classical Review.	Youth's Companion.
Courier-Journal.	Poet Lore.
Critic.	Shakspeariana.
Eclectic Magazine.	Christian Union, N. Y.
Edinburg Review.	Quarterly Review.
Education.	London Quarterly.
Electrician and Electrical Engineer.	Old and New Testament Student.
Electrical World.	Truebner's Oriental Record.
Engineering and Mining Journal.	Trans-Atlantic.
Engineering News.	New York World.
Forum.	Scribner's Magazine.
Gardener's Chronicle.	American Journal of Science.
Globe-Democrat.	American Antiquarian.
Harper's Monthly.	United Service.
Harper's Weekly.	

PERIODICALS PRESENTED TO THE LIBRARY.

American Digest.	Missouri Statesman.
Apostolic Guide.	Missouri Deaf-Mute Record.
Breeder's Gazette.	Musical Record.
Carrollton Democrat.	Nebraska Farmer.
Central Baptist.	Our Dumb Animals.
Christian Standard.	Post-Dispatch.
Colman's Rural World.	Saline County Progress.
Columbia Herald.	Saline County Democrat.
Industrialist.	St. Louis Evangelist.
Jefferson City Tribune.	San Jose Daily (Cal.)
Kansas City Presse.	Sturgeon Leader.
Lamar Sparks.	Traveler's Record.
Manifesto.	Voice.
Mexico Intelligencer.	Weekly Democrat-News.
Mid-Continent.	Western Agriculturist.
Mining Journal.	Westliche Post.

The library room covers the entire second floor of the east wing, the inside dimensions being 106x71 feet and height of story 24 feet. The room is accessible by two stairways leading directly from the chapel, which is immediately below, and it also has a side entrance from the corridors which connect with the main entrances of the building. The room is by side-lights and sky-lights well lighted, and by flues in the walls well ventilated. It is heated by steam, and in every way admirably suited to the purpose. Books are very heavy, and some idea can be formed of the strength of the floor from the fact that it rests on Howe trusses five feet in depth with a span between iron columns of only 42 feet and resting on outside walls 3 feet in thickness. This magnificent room has no columns in it, the roof being self-supported. Its capacity and capability as a library and study hall are exceptionally good.

The walls of the library hall are rapidly becoming covered with portraits, landscape scenes, resolutions, etc. Some of the pictures are as large as life, presenting a very striking appearance. We have received, this year, pictures of President Lathrop, M. Pasteur, Henry Clay, Thomas Arnold, and also a handsome senatorial grouping.

The books belonging to the societies are kept in their halls, and those of special departments in the professors' rooms controlling those departments. The law library is an institution in itself, independent and effective for good. Its librarian

is Prof. Yantis. Law students are permitted the use of books in the law library room, which is adjacent to the law lecture room.

Members of the Faculty are permitted to take books from the library hall, each member being entitled to six books for one week.

Any student who deposits the value of the book is permitted to take one out of the Columbia library to be held one week; or, if needed to promote studies, on the same terms, out of general library over night.

The reading room is open during the school year, excepting Sundays and legal holidays—in winter from 7:45 a. m. to 5 p. m., and in summer until 6 p. m.

Students are expected to be in the library at work if not at recitation, or at their residences, during the school hours.

The librarian and his assistant make a study of the contents of the library so as to render valuable assistance in selecting matter for the use of the students. To facilitate this, students have access to the library catalogue, which presents a thorough classification of all books.

J. W. MONSER, Librarian.

H. E. MONSER, Assistant Librarian.

DIRECTIONS FOR NEW STUDENTS.

1. If assistance is desired in obtaining board, report to the Proctor at the University buildings.

2. New students will first present themselves for examination for admission to the University. This should be done *before paying tuition fees*. Examinations for admission will be given by the English and Mathematical departments on Thursday, Friday, Saturday and Monday, September 4th, 5th, 6th and 8th, preceding the opening of the University.

3. After passing entrance examinations, before entering the University, \$15.00 must be paid to the Treasurer, and his receipt obtained. The law student pays \$50.00 the first year; \$40.00 the second year; the medical student \$40 00, and \$10.00 for the Demonstrator's ticket.

4. The Treasurer's receipt should be at once presented to the Proctor at the University, when the name of the student will be entered upon the University roll.

5. The Professional student must present the card received from the Proctor to the Secretary of the Faculty, who will enroll his name and issue to him his matriculation ticket, with the instructions necessary for enabling him to have his name entered on class roll.

6. The Academic student must present the Proctor's card to the Secretary of the Faculty, who must issue a matriculation ticket, admitting new students to the University, and former students to the advanced classes for which, according to the Faculty record book, they have been examined. Students cannot enter classes without having borne an examination therefor.

STUDIES AND CHAPEL.

1. Academic students are expected to have four hours daily with the Faculty at lectures or recitations. Class-cards when once filed with the Secretary can be changed only by Faculty action.

2. Prompt attendance and orderly conduct at the daily devotional exercises in the University chapel are required (of every student).

3. Absences from chapel, as from town, are permitted or excused by the President.

CLASS-GRADING AND ABSENCES.

1. Academic Class-grading is recorded by the Professors on such a scale that 96 to 100 entitles to "first rank with distinction," 90 to 96 to "first rank," 70 to 90 to "second rank," 60 to "passed," and under 60, "not passed." The numerical standing is not communicated to students.

2. All academic class-absences are recorded. Excuses are to be rendered to the Professor.

EXAMINATIONS AND CLASS HONORS.

1. Examinations at the end of each semester close the studies pursued to that point. Re-examinations for substitution of grades are not allowed after the lapse of one scholastic year.

2. Only those Seniors who shall have attained "first rank with distinction" shall be eligible to the honor of valedictorian at Commencement. The candidate or candidates are determined by the Secretary of the Faculty on the first week in May of each year.

3. All special examinations are in the discretion of the heads of the departments.

DISCIPLINE.

The Faculty requires every student to pay strict attention to the duties assumed by him, and to be honorable and creditable in deportment to Faculty, fellow-students and citizens. This is the only rule of behavior, the highest penalty for violation of which is expulsion.

FEES AND EXPENSES.

Annual entrance fee \$10, Library and incidental fee, per semester, \$5: that is, the student who enters the first semester pays \$15, and for the second semester only \$5, having paid his entrance fees for the year, upon admission. If he enters the second semester he pays \$15: *i. e.*, entrance and semester fees. These charges are so low as properly to be considered merely nominal.

Medical and engineering students are charged \$40 for the year, to be paid upon entrance. This includes the incidental fee. Demonstrator's ticket \$10, payable by the medical student upon matriculation. Law students pay \$50 first year; \$40 second year.

The fee for diplomas is \$5. This must be paid to the Treasurer of the University, and his receipt handed to the Secretary of the Faculty before the name is recommended to the Curators for the degree.

BOARDING.

Board in private families, with lodging, washing and fuel, may be obtained for \$3 to \$4.50 a week. Those who enter the club may reduce this amount to \$1.75.

THE NEW CLUB-HOUSE.

The new club-house affords accommodations for ninety students. The cost of board and washing to those who enter the club is about \$1.75 per week. The rooms are furnished with beadstead, stove, table and two chairs. Occupants are expected to furnish whatever else they deem necessary.

The members of the club have their own organization—president, commissary, secretary, censors, etc. They assess themselves, collect the same, and buy their own provisions.

THE JAMES S. ROLLINS UNIVERSITY SCHOLARSHIPS.

The Hon. James S. Rollins leaves six thousand dollars (\$6,000) to endow six scholarships in the University—"the interest" on this \$6,000 "to be forever used and appropriated under the authority and by the direction of the Board of Curators of the University of the State of Missouri for the following purposes, that is:

"To found scholarships to be awarded by the President and Faculty of the University—the vote in each case to be by ballot—as a reward for excellence and promise in—

"*First*—The College of Arts, for the degree of A. B., fifty dollars.

"*Second*—The College of Arts, for the degree of B. S., fifty dollars.

"*Third*—The College of Agriculture and Mechanic Arts, degree of B. Ag., fifty dollars.

"*Fourth*—The College of Law, for the degree of LL. B., fifty dollars.

"*Fifth*—The College of Medicine, for the degree of M. D., fifty dollars.

"*Sixth*—The College of Engineering, for the degree of C. E., fifty dollars.

"These scholarships are intended as a recognition of merit and character in the beneficiaries, and shall be payable on the first day of June of each year to that member of the *Junior class*, in each of the colleges designated, who shall be adjudged entitled to it by the President and Faculty, and the names of the persons receiving said scholarships shall be publicly announced on Commencement day by the President of the University.

"In according these scholarships, it is earnestly impressed upon the President and Faculty of the University, that in the mind of the donor, purely intellectual and literary ability are not alone to be considered, but that the moral character of the contestants should be regarded as a factor of no small weight in coming to a decision.

"With the earnest hope that by the means here provided, worthy young men and women may in all coming time be helped and encouraged in their struggle toward a higher life and greater usefulness, this fund is committed to the honor and good faith of the State, whom the Board represent, and by whose authority the donation is made and accepted.

"I am very respectfully,

(Signed)

"JAMES S. ROLLINS."

ROLLINS AID FUND.

[Extract from the will of Anthony W. Rollins, M. D., dated 1843, and probated December 10, 1845, Prob. Record, Book B, pp. 743-4.]

Item 7. Having felt the great disadvantage of poverty in the acquisition of my own education, it is my will that my executors, hereinafter named, shall, as early after my death as they may deem most expedient, raise the sum of ten thousand dollars by the sale of any lands of which I may die seized, and which I have not specifically bequeathed in any of the foregoing items, which sum of ten thousand dollars I desire may be set apart for the education of such poor and indigent youths of Boone county, both male and female, as are unable to educate themselves.

Item 8. When my executors shall have raised the sum of ten thousand dollars in the manner specified above, it is my will that they pay over the same to Alexander Persinger, Gilpin S. Tuttle and James W. Dailey, justices of the county court of Boone county, or their successors in office, who may compose the county court of Boone county at the time, and that said fund shall remain with and be vested in said court as a permanent fund, for the promotion of the object specified in the seventh item of this will above.

Item 9. It is my will that the judges of the county court shall loan out the fund thus vested in them, at an annual interest of ten per centum per annum, and in every instance upon good personal security, with mortgage upon real estate at least in value to the sum loaned, and in such manner as will insure the payment of the interest thereon at the expiration of each year; it is my will, further, that three-fourths of the interest thus annually accruing shall be set apart; or so much thereof as may be necessary, to pay the tuition of such youths as may have entered the Columbia Female Academy or the State University, under the provisions hereinafter named; and the one-fourth of the interest thus annually accruing, and so much of the remainder as shall not have been appropriated for any one year as above, shall be annually added to and become a part of the permanent fund.

Item 10. It is my will that the President of the State University of Missouri, and the Principal of the Columbia Female Academy, shall in each year visit the common schools of the different neighborhoods of Boone county, and select from among the indigent boys and girls of the different schools or neighborhoods such of them as are inclined to avail themselves of the advantages of the fund set apart as above, always having reference in their selection to the moral and intellectual qualities of the youths above; and further, that the President, at each annual Commencement of the University, shall direct the public attention to this subject, invite the citizens who may be present to subscribe by way of enlarging the fund from year to year, thus appropriated to the education of the poor; and, further, that in selecting boys as above, preference may be given to such as evince an inclination to preach the gospel.

NOTE THAT—

This fund is held by the county court of Boone county and invested in Boone county 8 per cent bonds. About sixteen hundred dollars a year are available for aiding students.

As the Columbia Female Academy is defunct, it is the duty of the President of the University "to select" the beneficiaries as students of the University. (Item 10.) This choice is regulated by several circumstances, as that—

1. The beneficiaries must belong to Boone county, in good faith and not merely nominally. (Items 7 and 10.)

2. They may be "both male and female," but must be needy: *i. e.*, "unable to educate themselves." (Item 7.)

3. Regard must be had to "moral and intellectual qualities." (Item 10.) Hence, (a) preference will be given to such as show superior capacity, whether in the University classes or in the schools; and, perhaps, a system of examinations might aid in the wise and impartial determination of the choice. Hence, also, (b) aid from this fund will, in all cases, be withdrawn from students who incur College discipline, or who fail to maintain a reputation for exemplary conduct and scholarship. The incurring of marks of demerit may be considered such discipline, and falling below the required standard of scholarship, in any study, such failure. Disorderliness is aggravated by being a beneficiary, and any part of an apportionment not paid may, on that account, be recalled at any time.

4. Other things being equal, "in selecting boys as above, preference may be given to such as evince an inclination to preach the gospel." (Item 10.)

5. Whilst aid is not limited to tuition (Item 7) it is plainly first in the contemplation of the benefactor. (Item 9.) This fund, therefore, has in it the virtue of strengthening the University, whilst it provides for the specific and legitimate exercise of its educational functions, in the interest of the needy, in its own immediate locality,

The will does not provide at whose direction, nor in what sums, the money is to be apportioned, and this, therefore, is left to the good understanding of the county court and the President of the University. In order to aid as large a number as possible, it is ordered by the court that not more than the sum of \$60 per annum shall be appropriated to any one pupil; and in some cases it is found that only part of the tuition and contingent fees is needed, so that the aid which has been extended to over forty during the past year has ranged from \$10 to \$60—those receiving the largest sums being exceptional.

6. If the applicants are "youths" of Boone county, unable to educate themselves, and of good moral and intellectual qualities, whilst a preference is allowed to those having the ministry in view (Item 10), yet there appears to be nothing which excludes such as may have in contemplation any of the professional courses of the University. As the donor, for example, had struggled to obtain his professional education, it would be unnatural to suppose that, by any implication, the "indigent" and worthy professional student would be excluded.

The provision that one-fourth of the interest must annually be added to the principal of this fund may ultimately become a question of great magnitude, which will require judicial determination.

Applications for aid from the Rollins fund must hereafter be in writing; a blank form will be furnished, embracing the points presented above, and when filled, it will be considered and placed on file, for open inspection and preservation. Should any mistake or misrepresentation of consequence be brought to light at any time, proper steps will be promptly taken. The applicants must appear in person at the opening of the first semester, September 9, as no reservations will be made.

It is very desirable that those who receive aid from this fund, according to the provisions of the will, should not feel themselves humiliated nor compromised in any respect. The money belongs to the worthy beneficiaries, and they are morally and legally entitled to it, just as if so much of the estate out of which it has arisen had been set apart and left to them by name in the will. It is the desire that none except those entitled to it shall, by mistake or otherwise, appropriate any of it; and also that the lawful beneficiaries shall themselves receive, severally, only their just apportionments.

Dr. Anthony W. Rollins, who founded this aid fund, was the father of the Hon. James S. Rollins, who was for a number of years President of the Board of Curators, and who, when a young man (1839), actively participated in the efforts which secured the location of the Missouri University to Boone county.

RESIDENT GRADUATES.

It is hereby resolved by the Board of Curators, That hereafter all regular graduates in any department of the University, and every regular graduate of the Normal Schools established by law within this State, also all regular graduates of "Christian Female College" and "Stephens Female College," located in Columbia, and the graduates of all other regularly chartered literary and scientific colleges in this State, with regular college classes established therein, and that are authorized by law to confer degrees and to grant diplomas to their students, shall be entitled to enter all the departments of the State University, including the Mining Department at Rolla, as Post-Graduates, free of the payment of tuition fees, and to receive instruction in the same manner as other students in the Practical, Literary and Scientific departments or classes (and all students taught in the University), and which they may choose to enter: Provided, however, that neither Law nor Medical students are included in this resolution; and also, that they may have full access to the Library of the University, with all other students, on such terms and under such rules as may be prescribed by the Executive committee. (The Engineering school is also excepted.)

By an act of the Board of Curators, June, 1874, it is provided :

1. That the graduates of certain institutions, named and designated in said act, shall be admitted to all departments of the University, except those of Medicine, Law and Engineering, "to receive instruction in the same manner as other students," without the payment of tuition fees, but on payment of \$5.00 per semester incidental fees.

2. That said resident graduates shall have the privileges of the Library, on such terms and under such rules as the Executive committee may determine.

3. That preliminary to admission, each entrant shall exhibit his or her diploma in evidence of such graduation, to the President of the University, or at Rolla, to the Director. (This third point is made in the volume of Laws, published by order of the Board.) Therefore,

Resolved—First, that this memorandum of the aforesaid state of fact be spread on the minutes of the Faculty for convenience or reference; and

Second, That it is the understanding of the Faculty, that whilst resident graduates thus admitted are to be allowed optional attendance on the classes, without being required to recite, unless it be as a condition of acquiring a class standing, yet otherwise they are to be subject to all the rules of behavior and discipline of under-graduates.

MINISTERS AND STUDENTS PREPARING FOR THE MINISTRY.

Resolved by the Board of Curators of the University of the State of Missouri, That hereafter all regularly ordained ministers of the Gospel belonging to any of the various religious denominations of this State in good standing, and who may desire to improve their scholarship and moral and intellectual culture, shall be allowed to attend any of the schools of the University without the payment of tuition fees, except the schools of Law, Medicine and Civil Engineering—the same privilege to be extended to any young man in this State preparing for the ministry, who will submit testimonials that shall be satisfactory to the President and Faculty of the University, that he is in good faith a candidate for the ministry, and that he is unable to meet the expenses of education at the University without aid.

Adopted June 2, 1880.

LITERARY SOCIETIES.

There are three literary societies of young men and one of young women connected with the University, viz.: The "Athenæan," the "Union Literary," the "Bliss Lyceum" and the "Philalethean." These societies have spacious and well-furnished halls in the University edifice, and hold weekly meetings for improvement in debate, declamations, oratory and composition.

These societies are in a flourishing condition, and form a most important means of culture, especially in speaking and writing.

An address is delivered before them, united, during Commencement week, and diplomas are given to such members as belong to the graduating class.

YOUNG MEN'S CHRISTIAN ASSOCIATION.

This association has a membership of nearly a hundred and promises to become an instrument of great good. It is composed of devoted, Christian young men who make the uplifting of their fellow-students their chief aim. It meets every Sunday afternoon.

PRIZES.

IN ORATORY—Founded by Hon. James L. Stephens, a retired merchant of Columbia, and annually awarded for the best oration of Senior class.

A book in defense of the Christian religion, and a gold medal, for the purchase of which the annual interest on \$500 is available.

JUNIOR MEDAL—This prize, offered by the literary societies for the best oration, is open to all students of the University below the Senior year.

IN DECLAMATION—The literary societies, to best speakers in declamation contest. For Rollins Scholarship see page 138.

ASTRONOMICAL MEDAL—For best thesis by a Senior on some astronomical subject.

IN PHYSICS—\$10 in money, by Charles Dachsel, engineer, Jefferson City, Mo., for best thesis on steam engine.

MCANALLY MEDAL—For best English essay.

Subject for "English Medal," 1890-91, "The Literature of the South."

For the Appleton prize for competition in the Junior and Senior classes and the medal for the Senior class, see Latin department.

The heads of the several departments dispense prizes and distinctions in their discretion.

ALUMNI.

The Alumni Association is composed of graduates of the University. It holds an annual meeting on Wednesday and Thursday of Commencement week, and is addressed in the University chapel by an orator previously selected from its own body.

The objects of this society are the promotion of education, especially in the halls of the Alma Mater, the reunion of early friends and co-laborers in literary pursuits, and the revival of those pleasing associations which entwine themselves about academic life.

The fee for membership is \$2. This is added to the permanent fund, the interest of which, only, is used. It is hoped that all graduates of the University, whether academic or professional, will become members of the Association. The Librarian solicits aid in securing facts for the next triennial, and will be thankful for published notices of, or books, or pamphlets and articles, published by officers and graduates.

C. B. Rollins, Columbia, President; J. S. Clarkson, Columbia, Treasurer; T. J. Lowry, Columbia, Secretary; Orator, H. B. Hilgeman, Class '80, St. Louis, Mo.

A subscription to the amount of \$3,000 has now been raised and put at interest. The attention of the Alumni is called to this fact. The time has come for effective work. Nothing can be done without an efficient organization. Come and let us organize. Our Alma Mater needs our co-operation. She sees that her greatest strength in the future must come from those who know best her true aims, real wants, and who feel the most pride in her prosperity. In union there is strength. Come to the reunion June 4 and 5, 1890.

HONORABLE MENTION.

1888-9.

All students who have finished the work of any department, and who have reached in it an average grade of 96 to 100, shall be named by the Professor in charge of such department in his annual report to the President of the University for HONORABLE MENTION in the catalogue; this fact of honorable mention shall likewise be stated on the Commencement program in the case of graduates.—[From rules for grading students, adopted April, 1884.]

DEPARTMENT OF CHEMISTRY.

MYRON ALFRED CORNER.
CURTIS FLETCHER MARBUT.

THOMAS JEFFERSON JACKSON SEE.
GEORGE FAUST YOUMANS.

DEPARTMENT OF ENGLISH.

CHARLES HENRY STUMBERG.

THOMAS JEFFERSON JACKSON SEE.

DEPARTMENT OF GEOLOGY AND MINERALOGY.

ELSTON HOLMES LONSDALE.
MITCHELL CROSS SHELTON.

CURTIS FLETCHER MARBUT.
THOMAS JEFFERSON JACKSON SEE.

DEPARTMENT OF HEBREW.

THOMAS JEFFERSON JACKSON SEE.

DEPARTMENT OF LATIN.

THOMAS JEFFERSON JACKSON SEE.

CHARLES HENRY STUMBERG.

DEPARTMENT OF METAPHYSICS.

JAMES THADDEUS DICK.

CHARLES HENRY STUMBERG.

DEPARTMENT OF MATHEMATICS AND ASTRONOMY.

THOMAS JEFFERSON JACKSON SEE.

DEPARTMENT OF BIOLOGY.

THOMAS JEFFERSON JACKSON SEE.

THE JAMES S. ROLLINS UNIVERSITY SCHOLARSHIPS.

These scholarships were awarded in 1889 as follows:

College of Arts, A. B. Course.....	JAMES HENRY COONS
College of Arts, S. B. Course.....	CHARLES PAGE WILLIAMS
College of Agriculture	JOHN LEWIS TANDY
College of Law.....	JAMES L. NICHOLAS
College of Medicine.	JOHN GARTH RUCKER
College of Engineering, C. E. Course.....	FRANK BLAIR WILLIAMS

TRIENNIAL.

ABBREVIATIONS.

A. B., Bachelor of Arts.....(6 years)	T. E., Topographical Engineer.....(4 years)
A. M., Master of Arts.....	Sur., Surveyor.....
Ag. B., Bachelor of Agriculture.....(6 years)	a., Academic Graduate.....
Ag. M., Master of Agriculture.....	ag., Agriculture.....
C. E., Civil Engineer.....(4 years)	b., Banker.....
D. Ag., Diploma in Agriculture.....(2 years)	b. v., Board of Visitors.....
D. B., Bachelor of Didactics.....(6 years)	c., Curator.....
D. H., Dip. in Horticulture.....(2 years)	d., Dead or died.....
D. P. & C. Dip. in Phys. and Chem. ....(special)	div., Divinity.....
L. B., Bachelor of Letters.....(6 years)	f., Faculty.....
LL. B., Bachelor of Laws.....(2 years)	l., Law.....
L. M., Master of Letters.....	m., Medicine.....
M. E., Mining Engineer.....(4 years)	ma., Manufacturer.....
N. G., Normal Graduate.....(4 years)	me., Merchant.....
N. D., Normal Diploma.....(2 years)	m. s., Mining School.....
N. S., Natural Science.....(special)	p., Professional Graduate.....
Pe. B., Bachelor of Pedagogics.....(6 years)	t., Teaching.....
Pe. P., Principal of Pedagogics.....(2 years)	e., Engineering.....
Ph. B., Bachelor of Philosophy.....(6 years)	s., Surveying.....
Ph. M., Master of Philosophy.....	br., Broker.....
S. B., Bachelor of Science.....(6 years)	ed., Editor.....
S. M., Master of Science.....	st., Student.....

SUMMARY OF GRADUATES.

ACADEMIC :		PROFESSIONAL :	
A. D. B.....	7	Ag. B.....	10
A. B.....	278	LL. B.....	340
S. B.....	144	N. D., or Pe. P.....	204
Ph. B.....	22	D. H.....	47
L. B.....	32	M. D.....	480
N. S.....	1	C. E.....	71
Total.....*	484	M. E.....	25
		D. P. & C.	1
		T. E.....	21
		B. A. S.....	12
		Total Professional.....	1412
		Grand total.....	1896

MEMBERS OF THE BOARD OF CURATORS.

Entered	Retired	Entered.	Retired.
1839 Thomas M. Allen, President, Vice-President, d.....	1843	1839 G. Tutt.....	1841
1839 E. E. Bass, d.....	1849	1839 William Scott, President....	1843
1839 I. O. Hockaday, d.....	1841	1839 R. W. Wells.....	1841
1839 John A. Henderson.....	1841	1839 J. Spalding.....	1841
1839 J. J. Lowry, M. D., d.....	1841	1839 T. Allen.....	1841
1839 R. Hughes.....	1841	1839 David Weir.....	1841
1839 T. A. Smith.....	1841	1841 William Shields, d.....	1843
1839 M. M. Marmaduke, Vice- President, d.....	1841	1841 Thomas D. Grant, d.....	1849
1839 G. C. Hart.....	1841	1841 John Slack, Vice-President, President, d.....	1844
		1841 A. W. Rollins, M. D., d....	1843

MEMBERS OF THE BOARD OF CURATORS—Continued.

Entered.		Retired.	Entered.		Retired.
1841	R. S. Thomas, Secretary, d.	1843	1853	Joseph Chew, M. D.	1858
1841	Warren Woodson, Vice-President, President, Treasurer, d.	1849	1853	Henry Slack, d.	1855
1841	T. West	1843	1853	Wm. A. Hall.	1854
1841	G. M. Bower	1843	1853	Charles A. Hayden	1856
1841	James W. Morrow	1843	1854	George W. Hough	1856
1843	W. A. Robards, Secretary, d	1849	1854	John B. Clark, d.	1856
1843	C. W. Flanagan	1845	1856	James W. Morrow	1858
1843	W. Carson, d.	1845	1856	John Slack, d.	1865
1843	M. J. Moss	1845	1856	Allen B. Orear, d.	1860
1843	M. Blair	1845	1856	P. H. McBride, President, d.	1860
1843	W G Minor	1844	1856	M. Horner	1860
1843	W B. Napton, d.	1846	1856	G. L. Pollard	1860
1843	J. H. Stone	1844	1856	Charles L. Rogers	1857
1843	Caleb S. Stone, Vice-President, President, Sec'y, d.	1856	1856	John D. S. Dryden	1858
1843	J. Carpenter	1847	1856	Peter Carr	1858
1843	F. Wright	1845	1856	John A. Snell	1860
1844	Thomas M. Allen, d.	1849	1856	H. W. Cross	1860
1844	W. H. Duncan, M.D., Treas.	1856	1856	Calvin F. Burnes	1857
1845	John Slack, d.	1849	1856	C. P. Bullock	1857
1845	W. J. Minor	1848	1856	W. S. Mosely, d.	1858
1845	Claiborne F. Jackson, d.	1846	1856	Wm. E. Brady	1860
1845	Alexander Persinger, d.	1849	1857	Wm. A. Seav	1860
1845	Moss Prewitt, President, d.	1849	1857	George H. Hall	1860
1845	A. H. Robinson	1849	1857	Peter S. Wilkes, d.	1860
1846	*J. C. Edwards, Governor of the State, d.	1849	1858	Michael Bright	1860
1846	*F. K. Martin, Secretary of State, d.	1849	1859	John W. Harris, d.	1860
1846	*P. G. Glover, Treasurer of State	1849	1859	A. S. Walker	1860
1846	*Jas. R. McDearmon, Auditor of State	1849	1860	D. H. Hickman, d.	1862
1846	*J. H. Lathrop, LL. D., d.	1849	1860	Ira Divoll	1864
1846	Allen B. Orear, d.	1847	1860	J. W. Tucker	1862
1846	John Ellis	1849	1860	Wm. H. Duncan	1862
1847	James S. Rollins, d.	1849	1860	Eli E. Bass, Vice-Pres't d.	1862
1848	Allen B. Orear, d.	1849	1860	Wm. H. Allen, President	1864
1849	T. R. H. Smith, Secretary...	1852	1860	Mathew R. Arnold	1864
1849	Alton Long	1853	1860	I. W. Boulware	1863
1849	W. J. McElhaney	1851	1860	A. W. Flournoy	1862
1849	R. Brown	1856	1860	J. W. Hailey	1862
1849	W. D. McCracken, Vice-Pres	1856	1860	W. P. Hall	1863
1849	Asa Ellis	1856	1860	A. W. Doniphan, d.	1862
1849	J. A. Brown	1851	1860	F. M. Cockrell	1862
1849	H. C. Dunn	1851	1860	J. L. Minor	1862
1849	F. R. Palmer, President	1856	1860	J. D. Hill	1862
1849	C. H. Hughes	1851	1860	P. R. Smith	1862
1849	John Corby	1853	1860	J. J. Brady	1862
1849	James A. Clark	1856	1860	R. A. Hatcher	1862
1849	Addison M. Lewis	1853	1860	Robt L. Todd, Secretary	1873
1849	James Ellison	1856	1862	Thomas B. Reed	1864
1849	W. C. Jones	1851	1862	Mordecai Oliver	1863
1851	W. J. Minor	1853	1862	Wm. S. Mosley, d.	1863
1851	H. F. Garey, Secretary	1856	1862	George O Yeiser	1863
1851	N. C. Orear	1853	1862	P. B. Locke	1863
1851	B. H. Emerson	1853	1862	John F. Philips	1863
1851	D. Patten	1853	1862	Sample Orr	1863
1851	H. Fullbright	1853	1862	F. T. Russell	1871
1853	Wm. G. Elliott, Jr.	1856	1862	John F. Williams	1864
1853	R. G. Roberts	1856	1862	James H. Birch	1863
1853	W. H. Buffington	1854	1862	J. J. Brady	1863
			1863	Odon Guitar	1864
				Fred. Overstoltz	1864
				Wm. Carter	1864
				W. A. Gibson	1864
				J. H. Moss, d.	1864
				P. B. Locke	1864
				T. R. H. Smith	1864

* Ex officio members of the Board.

MEMBERS OF THE BOARD OF CURATORS—Continued.

Entered.	Retired.	Entered.	Retired.
1864 S. M. Breckenridge.....	1865	1872 John E. Worth, Esq.....	1873
1864 Lemuel Dunn.....	1865	1872 Henry Smith.....	1875
1864 Henry A. Nelson.....	1866	1872 William F. Switzler.....	1875
1864 Elijah Perry, Vice-President	1875	1873 John F. Bush.....	1874
1864 John Sutherland.....	1870	1873 Jerre C. Cravens.....	1889
1864 Francis Kellerman.....	1867	1873 Alex. H. Dockery, M. D....	1874
1864 James Lindsay.....	1867	1873 John W. Harris, d.....	1875
1864 John B. Clark of Dade.....	1866	1873 C. P. Jones, D. D.....	1875
1864 John R. Weaver.....	1866	1873 Joshua LaDue.....	1877
1864 George Longan.....	1866	1873 James H. Moss, d.....	1874
1864 Thompson J. Kelly.....	1866	1873 William Starke.....	1875
1864 Franklin Cooley.....	1867	1874 Martin S. Clardy.....	1875
1864 L. M. Lawson.....	1870	1874 Alexander M. Dockery, M. D	1875
1864 Bennett Pike.....	1865	1874 Henry Clay Ewing.....	1877
1864 George L. Hewitt.....	1866	1874 W. T. Lenoir, M. D.....	1875
1864 Alex. McMurty.....	1866	1874 Edwin W. Stephens.....	1875
1864 James H. Robinson.....	1866	1874 Squire Turner.....	1875
1864 Wm. Robinson.....	1865	(To consist of 13 members.)	
1865 Enos Clarke.....	1866	1875 John S. Clarkson, A. M.....	1887
1865 E. F. Esteb.....	1867	1875 Luther T. Collier.....	1877
1865 Gustavus Bruere.....	1868	1875 John A. Flood, d.....	1877
1865 Moss Prewitt, President, d..	1869	1875 William E. Glenn, M. D.,	
1865 Charles E. Leonard.....	1867	Vice-President, d.....	1880
1866 Edward L. King.....	1867	1875 Samuel H. Headlee, M. A...	1879
1866 John P. Clark.....	1867	1875 John Hinton.....	1878
1866 Thomas M. Allen, Vice-Pres-		1875 John E. Hutton, M. D.....	1877
ident, d.....	1872	1875 Robert F. Iakenan.....	1877
1867 J. M. Woods.....	1868	(To consist of 9 members—	
1867 J. W. Mathias.....	1873	Const 1875, Art. XI, Sec. 5.)	
1867 Andrew J. Shepherd.....	1868	1877 H. H. Middlecamp, M. D...	1878
1867 J. H. Baker.....	1870	1877 John D. Perry.....	1878
1867 George R. Smith.....	1868	1877 Alexander M. Dockery, M. D	1881
1867 Theo. S. Case, M. D.....	1870	1878 J. K. Rogers, A. M., d.....	1882
1867 A. J. Barr.....	1869	1878 William H. Lackland, Esq., d	1883
1867 Philemon Bliss, d.....	1873	1879 Charles C. Bland, Esq.....	1889
1867 B. F. Northcutt.....	1871	1879 John Walker.....	1882
1867 Eugene Williams.....	1868	1880 A. M. Millard.....	1884
1867 Paul Hubbard, M. D.....	1875	1881 James E. Lincoln.....	1884
1868 A. J. Conant.....	1875	1882 Wm. F. Switzler.....	1885
1868 Edward Wyman.....	1875	1883 Norman J. Colman.....	1889
1868 G. A. Moser.....	1871	1882 James R. Estill.....	1889
1868 C. P. Townsley.....	1869	1884 Joseph Campbell.....	1889
1868 W. C. Mattison.....	1870	1885 Robert Beverly Price.....	1885
1868 J. M. Martine.....	1871	1884 Dewitt Clinton Allen.....	1889
1869 James H. Kerr.....	1871	1885 Edwin W. Stephens, A. M.,	
1869 Orville S. Reid.....	1872	President.....	1887
1869 William H. McLane.....	1873	1886 J. S. Moss.....	1889
1869 W. W. Orriek.....	1872	1887 Geo. C. Pratt, C. E., d....	1887
1869 James S. Rollins, LL. D.,		1887 Wm. S. Pratt.....	1889
President, d.....	1886	1887 W. Pope Yeaman, D. D.,	
1870 Henry T. Mudd.....	1875	President.....	1889
1870 George W. Kinney.....	1873	1889 G. F. Rothwell.....	
1870 James Moore.....	1871	1889 C. C. Burnes.....	
1870 George Husmann.....	1873	1889 E. O. Stanard.....	
1870 Barnabas Smith.....	1871	1889 John Hinton, President...	
1870 Norman J. Colman.....	1877	1889 E. Y. Mitchell.....	
1871 J. W. Barret.....	1875	1889 R. B. Oliver.....	
1871 Samuel G. Williams.....	1875	1889 B. M. Dilley, Vice-President	
1871 William S. Dyer, M. D.....	1873	1889 C. H. Hardin.....	1889
1871 William T. Essex.....	1875	1889 G. B. Macfarlane.....	
1871 J. T. Wielandy.....	1875	1889 Gardiner Lathrop.....	
1871 J. D. Vincil, D. D.....	1874		

PRESIDENTS OF THE BOARD.

Entered.		Retired.	Entered.		Retired.
1839	William Scott, d.....	1840	1860	W. H. Allen.....	1863
1840	Thomas M. Allen, d.....	1843	1863	Thomas M. Allen, d.....	1865
1843	John Slack, d.....	1843	1865	Moss Prewitt, d.....	1869
1843	Warren Woodson, d.....	1848	1870	James S. Rollins, LL. D., d.	1886
1848	Caleb S. Stone, d.....	1850	1886	E. W. Stephens, A. M.....	1887
1850	F. R. Paluer.....	1853	1887	W. Pope Yeaman.....	1889
1853	Caleb S. Stone, d.....	1856	1889	John Hinton.....	
1856	P. H. McBride, d.....	1860			

VICE-PRESIDENTS.

1839	Thomas M. Allen, d.....	1840	1856	Major Horner.....	1860
1840	M. M. Marmaduke, d.....	1841	1860	E. E. Bass, d.....	1863
1841	John Slack, d.....	1843	1868	Thomas M. Allen, d.....	1872
1843	Warren Woodson, d.....	1843	1872	Elijah Perry.....	1875
1843	Caleb S. Stone, d.....	1848	1875	Wm. E. Glenn.....	1880
1848	James L. Mathews, d.....	1853	1880	Jerre C. Cravens.....	1889
1853	W. D. McCracken.....	1856	1889	B. M. Dilley.....	

SECRETARIES.

1839	Wm. Cornelius, d.....	1841	1856	Caleb S. Stone, d.....	1860
1841	Robert S. Thomas, d.....	1843	1860	R. L. Todd, A. M.....	1885
1843	Wm. A. Robards, d.....	1849	1885	J. H. Drummond, A. M.....	1889
1849	T. R. H. Smith, M. D.....	1851	1889	J. G. Babb, LL. B.....	
1851	H. F. Garey.....	1856			

TREASURERS.

1840	Warren Woodson, d.....	1841	1862	T. B. Gentry.....	1867
1841	W. H. Duncan, M. D.....	1855	1867	James H. Waugh.....	1873
1855	W. T. Lenoir, M. D.....	1862	1873	R. B. Price, M. S.....	

BUSINESS AGENTS.

1870	Paul Hubbard, M. D., (Cura- tor).....	1877	1878	James P. McAfee, (Proctor)..	1880
1877	O. L. Runyan.....	1878	1880	J. H. Drummond, (Proctor).	1889
			1889	J. G. Babb, (Proctor).....	

AGENTS FOR THE SALE OF AGRICULTURAL LANDS.

1870	J. W. Sutherland (removed).	1879	1888	J. B. Douglass.....	
1883	Fisher & Rollins.....	1886			

FARM SUPERINTENDENT.

1870	O. A. A. Gardner.....	1871	1885	C. M. Woodward.....	1886
1871	Robert T. Maddex.....	1883	1886	W. S. Wilson.....	1889
1883	Levi Chubbuck.....	1885	1889	A. C. Vandiver.....	

BOARD OF VISITORS.

Entered.	Retired.	Entered.	Retired.
1870 J. V. C. Karnes.....	1882	1884 A. A. Walker.....	1889
1870 Cyrus S. Brown.....	1889	1889 F. F. Rozzelle.....	
1870 Alex F. Denny, d.....	1887	1889 John F. Williams.....	
1870 Charles E. Leonard.....	1889	1889 Norman J. Colman.....	
1870 E. W. Fox.....	1889	1889 E. H. Norton.....	

SCHOOL OF MINES AT ROLLA.

EXECUTIVE COMMITTEE.

1876 William E. Glenn, M. D., chairman, Rolla, d.....	1880	1879 C. C. Bland, Esq., Rolla... 1889	
1876 J. C. Cravens, Springfield..	1889	1880 A. M. Millard.....	1884
1876 Samuel H. Headlee, M. D., St. James.....	1879	1884 Joseph Campbell.....	1889
		1889 E. Y. Mitchell.....	

SECRETARY.

1874 Prof. R. W. Douthat.....	1884	1888 T. M. Jones.....	
1884 Henry Wood.....	1888		

TREASURER.

1872 H. Demuth.....	1878	1884 Henry Wood.....	1887
1878 C. H. Frost, Rolla.....	1884	1887 D. W. Malcolm.....	

UNIVERSITY FACULTY.

	Entered.	Retired.
*John H. Lathrop, LL. D., Prof. Law, Ethics, Political Economy, Pres., elect, '41. Resigned.....	1843	1849
*R. S. Thomas, A. M., professor Metaphysics, English Literature; Librarian, '50-3.....	1843	1853
*Wm. W. Hudson, A. M., professor Mathematics, Physics, Astron- omy, '43-56; Pres <i>pro tem.</i> , '49-50; Pres. '56-9; professor Physice, astronomy, Engineering, '56-9.....	1843	1859
*George C. Pratt, A. M., professor Ancient Languages..	1843	1850
E. H. Leffingwell, M. D., professor Chem., Geol., Anat., Physiology.	1843	1848
R. A. Grant, tutor of Mathematics.	1846	1851
A. Litton, M. D., professor Chem., Min., Geol., Anat., Physiology..	1848	1849
E. H. Leffingwell, M. D., professor Chem., Mineralogy, Geol., Anat., Physiology.....	1849	1851
*W. C. Shields, A. M., tutor of Lang's, '49-51; adj. professor of Lang's, '51-6; assistant professor Latin, '56-60.....	1849	1860

*Deceased.

UNIVERSITY FACULTY—Continued.

	Entered.	Retired.
*James Shannon, LL. D., professor Law, Ethics, Political Economy ; President.....	1850	1856
*George H. Mathews, A. M., professor Ancient Lang's and Lit.	1850	1868
George C. Swallow, A. M., professor Chem., Geol., Anat., Phys.....	1851	1853
Bolivar S. Head, A. M., tutor Math., '51-3; Adju. professor Math., '53-6; professor Math., '56-60; Librarian, 56-60.....	1851	1860
*Sterling Price, A. M., tutor, '52-4; Adju. professor Eng. Lit., '55-6; Normal professor, instructor in Greek, '55-60.....	1852	1860
J. J. Jacobs, A. M., professor Metaphysics, Eng. Lit., '53-60; Law, Ethics, Political Economy, '56-60..	1853	1860
John Lock, M. D., professor Chemistry, Mineralogy, Geology, Anatomy, Physiology	1853	1857
W. Alexander, professor of Drawing.....	1856	1860
Ignace Hainer, instructor in Modern Languages.....	1856	1860
J. J. Searcy, principal in Primary Department.....	1856	1861
W. A. Buckner, assistant in Primary Department.....	1856	1857
W. J. Thompson, assistant in Primary Department.....	1857	1859
George C. Swallow, A. M., Prof. <i>pro. tem.</i> Chemistry, Mineralogy, Geology, Anatomy, Physiology	1857	1860
George M. Catron, A. B., tutor in Natural Science.....	1859	1860
*John H. Lathrop, LL. D., Prof. Metaphysics, English Literature '60-2; Chairman of Faculty, '60-5; Prof. Law, Ethics, Political Economy, '62-6; President '65-6; d.....	1860	1866
Edward T. Fristoe, A. M., Prof. Mathematics, Physics, Astronomy, Librarian.....	1860	1862
A. G. Wilkison, A. M., Ass't Prof. Ancient Languages, Instructor in Modern Languages.....	1860	1861
Benjamin B. Minor, L. B., Prof. Ment., Moral and Political Science; President.....	1860	1862
Joseph G. Norwood, A. M., M. D., LL. D. Prof. Chemistry, Mineralogy, Geology, Anatomy, Physiology, '60-5; Natural Science, Natural Philosophy and Zoology, '65-'73; Librarian, '62-'77; Dean of Medical Faculty, '72-'80; Phys., General Chemistry, '73-6; Physics, '76-'80; Instructor of Medicine, Medical Jurisprudence, Law and Medical School, '72-'80.....	1860	
W. C. Dawson, Ass't in Primary department.....	1861	1862
J. V. C. Karnes, A. B., tutor Greek and English Literature.....	1863	1865
H. N. Ess, A. M., tutor Mathematics, German.....	1863	1865
Lawson G. Drury, A. M., tutor Mathematics, English Literature.....	1863	1865
L. B. Williams, tutor Greek, English Literature.....	1865	1866
George M. Catron, A. M., instructor in English Literature.....	1865	1866
*Joseph Ficklin, A. B., A. M., Ph. D., Prof. Mathematics, Astronomy, Mechanical Philosophy, to '79; Prof. Mathematics, Astronomy; d.....	1865	1887
John W. Cowgill, A. B., tutor Latin, Mathematics	1865	1866
*Daniel Read, LL. D., Pres. elect, '66; Prof. Mental, Moral and Political Philosophy. Resigned.....	1867	1876
Oren Root, jr., A. M., Prof. English Literature, instructor in French and German, Secretary Faculty. Resigned.....	1867	1870
C. H. Crowell, Principal Preparatory department.....	1867	1868
D. W. B. Kurtz, A. B., A. M., tutor in Latin, Mathematics, '67-8; As't in Col. of Normal Institute, '68-72. Resigned.....	1867	1872
Erastus L. Ripley, A. M., Principal of Col. of Nor. Inst., '68-76; Prof. of Pedagogy, Drawing; Dean of Nor. Faculty, '76-8. Resigned..	1868	1878
Mrs. C. A. Ripley, Preceptress of Col. of Normal Ins. Resigned.....	1868	1873
*Miss Mary B. Read, teacher in Model School, '67-70; assistant in Languages, '70-3, Prof. of German and French. Resigned.....	1868	1875
John Packer, A. M., Prof. of Ancient Lan., Literature. Resigned.....	1869	1872
Major-General R. W. Johnson, U. S. A., Prof. of Civil and Military Engineering and Tactics. Resigned	1869	1870

UNIVERSITY FACULTY—Continued.

	Entered	Retired
Charles V. Riley, A. M., Lecturer on Entomology.....	1868	1875
J. G. Anderson, student instructor Preparatory department.....	1868	1870
Eli Penter, student instructor, Preparatory department.....	1868	1870
Capt. R. B. Wade, U. S. A., Prof. Military Science and Tactics.....	1869	1871
E. H. Haight, A. B., Ass't Prof. Normal Instruction. Resigned.....	1869	1870
George C. Swallow, A. M., M. D., L. L. D., Professor Agriculture; Geology, '70-6; Botany, '71-6; Dean Agricultural Faculty, '72-4; Natural History, '76-'82.....	1870	1882
James W. Abert, A. M., Prof. English Literature; Instructor in Ger- man and French Transferred to Mining School.....	1871	1872
John H. Overall, A. B., LL. B., Prof. Law (did not serve). Resigned.	1871	1872
Maj. J. Wilson McMurray, U. S. A., Prof. Military Science and Tactics	1871	1873
Hon. Boyle Gordon, A. M., Prof. of Law.....	1871	1882
Hon. Samuel Treat, Lecturer on Law.....	1871	
*Hon. Arnold Kregel, Lecturer on Law.....	1871	1889
Paul Schweitzer, A. M., Ph. D., Prof. of Analytical and Applied Chem- istry, Toxicology, '72-6; Chemistry, '76—; Sec'y Faculty, '77-8..	1872	
James K. Hosmer, A. M., Prof. of English and History. Resigned....	1872	1874
Edward H. Twining, A. M., Prof. of Latin Lang.; Sec'y Fac., '74-7....	1872	1877
John M. Leonard, A. M., Ph. D., Prof. of Greek Language; Com- parative Philology, '73-77.....	1872	1879
*Hon. Philemon Bliss, LL. D., Prof. of Law; Dean Law Faculty....	1872	1889
*Thomas Allen Arnold, S. M., M. D., Prof. of Anatomy and Practice. Resigned.....	1872	1878
Andrew W. McAlester, A. M., M. D., Prof. of Surgery, Materia Medica. Diseases of Women and Children, '72-5; Surgery, Dis- eases of Women and Children, '75—.....	1872	
Miss S. Anna Ware, S. B., Assistant instructor in Language and Mathematics.....	1872	1873
Miss Louisa M. Wylie, S. B. Assistant instructor in Language and Mathematics.....	1872	1873
Hon. Henry S. Kelley, Lecturer on Law.....	1872	
Hon. Odon Guitar, Lecturer on Law.....	1872	1874
Prof. H. J. Detmers, Lecturer on Veterinary Surgery.....	1872	1873
Prof. L. J. Smith, Lecturer on Veterinary Surgery.....	1872	1873
Scott Hayes, M. S., M. Ag., Asst. Prof. Agr., '73-7; Asst. Librarian, '74-7; Librarian, '77-80; Asst. Sec'y Faculty, '77-8.....	1873	1880
William A. Cauthorn, A. M., Assistant Prof. of Mathematics.....	1873	
*Miss Lullie Gillette, N. G., instructor in Normal and Ppreparatory department. Resigned.....	1873	1876
William S. Pratt, A. M., instructor in Normal and Preparatory depart- ment. Resigned.....	1873	1877
Caleb L. Buckmaster, Student instructor in Preparatory department..	1873	1877
Samuel S. Hamill, A. M., Prof. Eng. His. Elocution. Resigned.....	1874	1876
John *H. Duncan, A. B., M. D., A. M., instructor in Physiology, Chemistry and Demonstrator of Anatomy, '74-8. Prof. Physiology. Materia Medica, Principles of Practice, '78—.....	1874	
Woodson Moss, M. D., instructor in Anatomy, and Practice of Medi- cine; Demonstrator of Anatomy, '74-8; Prof. of Anatomy and Demonstrator, '78.....	1874	
*Robert Fagan, S. B., Assistant instructor in Law.....	1874	1875
Benoni S. Newland, A. M., Prof. of German, French.....	1875	1877
William J. Babb, S. B., assistant instructor in Law.....	1875	1876
Samuel S. Laws, A. M., M. D., LL. D., President; Professor of Meta- physics.....	1876	1889
William H. Cole, A. M., Prof. of English.....	1876	1877
Miss Lizzie Bedford, instructor in Normal and Preparatory Studies...	1876	1877
Alexander Meyrowitz, A. M., Ph. D., Prof. of Hebrew and Semitic Literature; instructor in German, '77-8. Resigned.....	1876	1879

* Deceased.

UNIVERSITY FACULTY—Continued.

	Entered	Retired
Samuel M. Tracy, S. M., Asst. Prof. of Agriculture, '77-9; Prof. of Entomology and Economic Botany, '79. Resigned.....	1877	1887
Michael M. Fisher, A. M., D. D., Prof. of Latin Language and Literature; Chairman of University Faculty, 1889.....	1877	....
Thomas J. Lowry, S. B., N. G., M. S., C. E., Prof. of Civil Engineering; Secretary Faculty, '78-82; Dean Engin. Faculty, '78....	1877	....
*General George C. Bingham, Prof. of Art.....	1877	1879
David R. McAnally, Prof. of English.....	1877	1884
Miss Grace C. Bibb, Prof. of Pedagogy and Dean of the Nor. Faculty.	1878	1883
Mrs. J. P. Fuller, Prof. of German and French. Resigned.....	1878	1879
A. F. Fleet, A. M., Prof. of Greek. Resigned.....	1879	1890
James Shannon Blackwell, A. M., Ph. D., Prof. of Sematic Languages and Ancient History, and assistant in Greek and Latin.....	1879	....
George Husmann, Prof. and Supt. of Pomology and Forestry.....	1879	1883
Lieut. F. P. Blair, U. S. A., Prof. of Military Science and Tactics...	1879	1881
Mrs. O. A. Carr, assistant professor of English. Resigned.....	1879	1887
Conrad Diehl, professor of Art.....	1879	1885
B. F. Thomas, Ph. D., professor of Physics.....	1880	1885
C. G. Tiedeman, A. M., LL. B., assistant professor of Law; professor of Law, 1882.....	1881	....
Gutav Gehring, S. B., instructor in Chemistry.....	1881	1882
Lieut. J. J. Haden, U. S. A., professor of Mil. Science and Tactics..	1881	1885
W. C. Tindall, S. B., instructor in Mathematics; assistant in Mathematics, 1883.....	1881	....
Miss Josie B. Latham, A. B., instructor in Latin.....	1881	1882
J. W. Sanborn, S. B., professor of Agriculture; Dean Agr'l Faculty..	1882	1889
J. W. Spencer, Ph. D., professor of Geology and Mineralogy.....	1882	1887
John C. Jones, A. M., associate in Lat. and Comp. Phil.; Sec'y Faculty	1882	....
J. F. Hanna, A. M., M. D., prof. of Practice of Medicine and Thera..	1883	1886
James Black, A. B., assistant professor of Languages.....	1883	1887
W. H. Schuermann, C. E., assistant in Physics; assistant professor of Physics and Engineering, 1885.....	1883	1888
L. A. Taft, B. S., assistant professor of Horticulture.....	1884	1888
Paul Paquin, V. S., professor of Veterinary Science.....	1885	....
Lieut. E. H. Crowder, U. S. A., prof. of Military Science and Tactics.	1885	1889
E. A. Allen, professor of English and Dean of Normal Faculty.....	1885	....
W. B. Smith, Ph. D., professor of Physics, '88; professor of Mathematics and Astronomy, '88.....	1885	....
C. L. Speyers, Ph. B., assistant in Chemistry.....	1885	....
R. E. Call, assistant professor of Natural Sciences.....	1886	1887
G. M. B. Maughs, M. D., Emer. professor Obstet. and Dis. of Women	1886	1890
W. M. McPheeters, M. E. Emer., professor Mat. Med. and Ther....	1886	1890
P. G. Robinson, M. D., professor of Prac. Med. and Clin. Med.....	1886	1890
A. V. L. Brokaw, M. D., assistant Demonstrator and Surgeon.....	1886	1890
C. H. Dixon, M. D., assistant Demonstrator.....	1886	1890
Justin Steer, M. D., adjunct-professor, Prac. Med. and Clin. Med.....	1886	1890
F. Steuver, M. D., adjunct-professor, Ophthalmology.....	1886	1890
F. D. Mooney, M. D., Clin., assistant in Gynaecology.....	1886	1890
O. E. Forster, M. D., Clin., assistant in Otol. and Larynxology.....	1886	1890
F. R. Eversole, M. D., Clin., assistant in Dematology.....	1886	1890
T. A. Martin, M. D., Clin., assistant in Diseases of Children.....	1886	1890
J. K. Bauduy, M. D., professor of Diseases of Nervous System.....	1886	1890
C. E. Michel, M. D., professor of Ophthalmology.....	1886	1890
H. Tuholske, M. D., professor Clin. Sur. and Sur. Pathology.....	1886	1890
O. A. Wall, M. D., Ph. G., professor of Pharmacy.....	1886	1890
C. A. Todd, M. D., professor of Anatomy and Dis. of Ear and Throat..	1886	1890
J. P. Kingsley, M. D., Sec. professor Mat., Med. and Dis. of Child....	1886	1890
T. F. Prewitt, M. D., Dean, professor of Surg. and Clin. Surg.....	1886	1890
C. O. Curtman, M. D., professor of Chemistry.....	1886	1890

* Deceased.

UNIVERSITY FACULTY—Continued.

	Entered	Retired
G. A. Moses, M. D., professor of Obstet. and Diseases of Women	1886	1890
L. Bremer, M. D., professor of Physiology, Histology and Biology....	1886	1890
C. A. Todd, M. D., Demonstrator of Anatomy.....	1886	1890
W. A. Hardaway, M. D., Clinical Professor of Diseases of Skin.....	1886	1890
B. F. Hoffman, B. L., M. L.; Pe. P., Pe. B., assistant in Modern Lan.	1887	
H. C. Penn, A. B., assistant in English.....	1887	
George D. Purinton, A. M., Ph. D., professor of Biology, director and Curator of Museum.....	1887	
G. C. Broadhead, M. S., professor of Geology and Mineralogy.....	1887	
W. W. Clendenin, S. B., assistant in Zoology and Geology.....	1887	
J. A. Yantis, LL. B., professor of Law.....	1887	
A. A. Fuller, M. E., assistant professor Physics and Engineering	1888	1889
Paul Evans, assistant Veterinarian	1888	
J. W. Clark, B. S., Prof. of Horticulture.....	1888	
M. L. Lipscomb, A. M., professor of Physics.....	1888	
P. E. Lear, assistant in Chemistry.....	1888	1889
Marcellus J. Thompson, A. M., professor of Physics.....	1887	1888
Edward D. Porter, Ph. D., Dean of Agricultural College, and professor of Agriculture.....	1889	
Lieut. B. B. Buck, U. S. A., professor of Mil. Science and Tactics....	1889	
W. R. Dodson, B. S., assistant in Biology.....	1889	
Silas Dinsmoor, assistant in Chemistry.....	1889	
A. L. McRea, Ph. D., assistant professor of Physics.....	1889	
H. Phillips, T. E., assistant professor of Engineering	1889	
Alex Martin, LL. B., A. M., professor of Law and Dean of Law School.	1889	
W. G. Manly, A. M., professor of Greek... ..	1890	

LIST OF OFFICERS AND SUBJECTS TAUGHT.

- Agriculture—G. C. Swallow, Scott Hayes, S. M. Tracy, J. W. Sanborn, E. D. Porter.
- Anatomy—E. H. Leffingwell, A. Litton, G. C. Swallow, J. Lock, J. G. Norwood
T. A. Arnold, W. Moss.
- Ancient Language—G. C. Pratt, G. H. Matthews, J. Packer, A. G. Wilkison.
(See Latin and Greek.)
- Art—General George C. Bingham, Conrad Diehl.
- Astronomy—(See Mathematics.)
- Botany—G. C. Swallow, S. Hayes, S. M. Tracy.
- Chairman of Faculty—J. H. Lathrop, G. H. Matthews, M. M. Fisher.
- Chemistry—E. H. Leffingwell, A. Litton, G. C. Swallow, John Lock, J. G. Norwood,
P. Schweitzer, J. J. Haden, C. L. Speyers, G. Gehring.
- Deans—Agricultural Faculty, G. C. Swallow, J. W. Sanborn, E. D. Porter; En-
gineering Faculty, T. J. Lowry; Law Faculty, P. Bliss, Alex. Martin; Medical
Faculty, J. G. Norwood; Normal Faculty, E. L. Ripley, G. C. Bibb, D. R. Mc-
Anally, E. A. Allen.
- Demonstrator in Anatomy—J. H. Duncan, W. Moss.
- Diseases of Women and Children—A. W. McAlester.
- Drawing—W. Alexander, E. L. Ripley, Conrad Diehl.
- Elocution—O. Root, J. K. Hosmer, S. S. Hamill, W. H. Cole, D. R. McAnally.
- Engineering—W. W. Hudson, R. W. Johnson, J. W. McMurray, T. J. Lowry.

- English Literature—R. S. Thomas, S. Price, J. J. Jacobs, J. H. Lathrop, J. V. C. Karnes, L. G. Drury, L. B. Williams, G. M. Catron, O. Root. (See English and History.)
- English and History—J. W. Abert, J. K. Hosmer, S. S. Hamill, W. H. Cole, D. R. McAnally, E. A. Allen.
- Entomology—S. M. Tracy, G. D. Purinton.
- Geology—(See Mineralogy.)
- German and French—I. Hainer, A. G. Wilkison, H. N. Ess, O. Root, Miss M. B. Read, J. W. Abert, B. S. Newland, A. Meyrowitz, Mrs. J. P. Fuller, J. S. Blackwell, James Black, B. F. Hoffman.
- Greek—S. Price, L. B. Williams, J. V. C. Karnes, J. M. Leonard, A. F. Fleet, W. G. Manly.
- Hebrew and Semitic Literature—A. Meyrowitz, J. S. Blackwell.
- Language—W. C. Shields.
- Latin—(See Ancient Language). W. C. Shields, J. W. Cowgill, D. W. B. Kurtz, E. H. Twining, W. S. Pratt, M. M. Fisher, J. C. Jones, Anna Bates.
- Law, in Law School—J. H. Overall, B. Gordon, P. Bliss, R. Fagan, W. J. Babb, F. P. Blair, C. G. Tiedeman, J. A. Yantis, Alex. Martin.
- Law, Ethics and Political Economy—J. H. Lathrop, J. Shannon, J. J. Jacob, B. B. Minor. (See Mental, Moral and Political Philosophy; also Political Economy.)
- Lectures—Entomology—C. V. Riley; Law—S. Treat, A. Krekel, H. S. Kelley, O. Guitar, S. D. Thompson; Veterinary Surgery, H. J. Detmers, L. J. Smith; Engineering, G. C. Pratt.
- Librarians—R. S. Thomas, B. S. Head, E. T. Fristoe, J. G. Norwood, S. Hayes, J. H. Drummond, J. W. Monser.
- Materia Medica—A. W. McAlester, J. H. Duncan.
- Mathematics and Astronomy—W. W. Hudson, E. T. Fristoe, J. Ficklin, W. B. Smith. (See Mechanical Philosophy.)
- Mathematics—Assistant R. A. Grant, B. S. Head, H. N. Ess, L. G. Drury, J. W. Cowgill, D. W. B. Kurtz, W. A. Cauthorn, W. C. Tindall, W. W. Clendenin.
- Medical Jurisprudence—J. G. Norwood, A. W. McAlester.
- Mental, Moral and Political Philosophy—J. H. Lathrop, D. Read. (See Metaphysics.)
- Metaphysics—R. S. Thomas, J. J. Jacob, B. B. Minor, J. H. Lathrop, S. S. Laws.
- Military Science and Tactics—Gen. R. W. Johnson, Capt. R. B. Wade, Maj. J. W. McMurray, Lieut. F. P. Blair, Lieut. J. J. Hayden, Lieut. E. H. Crowder, Lieut. B. B. Buck.
- Mineralogy and Geology—E. H. Leffingwell, A. Litton, G. C. Swallow, J. Lock, J. G. Norwood, J. W. Spencer, G. C. Broadhead, W. W. Clendenin.
- Natural Science—G. M. Catron, J. G. Norwood.
- Normal—S. Price, E. H. Haight, D. W. B. Kurtz. (See Pedagogy.)
- Pedagogy, (See Normal.) E. L. Ripley, G. C. Bibb, D. R. McAnally, E. A. Allen.
- Physics—W. W. Hudson, E. T. Fristoe, J. G. Norwood, B. F. Thomas, W. H. Schuermann, W. B. Smith, M. Thompson, A. A. Fuller, M. L. Lipscomb.
- Physiology—E. H. Leffingwell, A. Litton, G. C. Swallow, J. Lock, J. G. Norwood, J. H. Duncan, Woodson Moss.
- Pomology and Forestry—Geo. Husmann.
- Practice of Medicine—T. A. Arnold, J. H. Duncan, J. F. Hanna, A. W. McAlester.
- President—J. H. Lathrop, W. W. Hudson, J. Shannon, B. B. Minor, J. H. Lathrop, D. Read, S. S. Laws.

Primary Instructors—W. H. Buckner, W. A. Thompson, W. C. Dawson, Miss M. B. Read, J. G. Anderson, E. Penter, Miss L. M. Wylie, Miss S. A. Ware, Miss L. Gillette, W. S. Pratt, C. L. Buckmaster, Miss L. Bedford.

Principal Primary Department—J. J. Searcy, C. H. Crowell, Mrs C. Ripley.

Secretary, since 1867—O. Root, G. C. Swallow, E. H. Twining, Paul Schweitzer, (S. Hayes Assistant), T. J. Lowry, Paul Schweitzer, J. C. Jones, (W. C. Tindall, Assistant.)

Surgery—A. W. McAlester, J. G. Broome (Lecturer.)

Veterinary Science and Surgery—Paul Paquin.

MEDICAL FACULTY.

	Entered.	Retired.
McDowell Medical Department of Missouri University, (opened 1845.)		
Richard F. Barrett, M. D., professor of Physiology and Materia Medica; Medical Jurisprudence, '48-50.....	1845	(?)
Joseph N. McDowell, M. D., professor of Anatomy and Surgery; Principles and Practice of Surgery, and of Clinical Surgery.....	1845	1850
Jno. S. Moore, M. D., professor of Theory and Practice of Medicine, Dean of Medical Faculty.....	1845	(?)
Jno. B. Johnson, M. D., professor of Pathology and Chemical Medicine.....	1845	(?)
Thomas Barboue, M. D., professor of Obstetrics and Diseases of Women and Children.....	1845	1849
Chas. W. Stevens, M. D., Demonstrator of Anatomy, '45-7; adjunct professor of Anatomy, '47- —, d.....	1845	1850
Jas. McDowell, M. D., adjunct professor of Surgery.....	1848	1850
Abner Hopson, M. D., professor of Chemistry and Medical Jurisprudence.....	1850	
S. Gratz Moses, M. D., professor of Obstetrics and Diseases of Women and Children.....	1850	(?)
John Hodgen, M. D., adjunct professor of Surgery and Demonstrator of Anatomy.....	1850	(?)
L. T. Pem, M. D., adjunct professor of Anatomy and Prosector....	1850	(?)
Closed. Medical Department of University reopened at Columbia. (See General Faculty).....	1856	1873
Medical Department of University and Missouri Medical College (at St. Louis)—united 1886, divorced 1890.		

SCHOOL OF MINES FACULTY.

	Entered.	Retired.
Charles P. Williams, A. M., Ph. D., Director; professor of Gen. Chem. Metallurgy. Resigned.....	1872	1877
James W. Abert, professor of Civil Engineering and Drawing.....	1872	
Nelson W. Allen, A. B., professor of Pure Mathematics, secretary Faculty. Resigned.....	1872	1874
William E. Glenn, M. D., professor of Anatomy, Physiology and Hygiene.....	1872	1874
William Couch, instructor in English.....	1872	1874
John H. Gill, Librarian.....	1872	1874
Geo. D. Emerson, professor of Civil and Mining Engineering.....	1873	1886
Robert W. Douthat, A. M., Ph. D., professor of Eng., secretary Faculty.....	1873	1884
Van Court Yantis, assistant professor of Mathematics, Librarian.....	1874	1875

SCHOOL OF MINES FACULTY—Continued.

	Entered.	Retired.
Almond W. Hare, M. E., assistant in Prep. Dept. and Chem. Lab'y...	1874	1875
Van Court Yantis, professor of Math. and Librarian.....	1875	1878
Chas. E. Wait, C. E., M. E. Director, professor of An'ly Chem.....	1877	1889
Edwin J. Jolley, adjunct professor of Math., Librarian.....	1878	1880
Miss Florence Whiting, assistant Prep. Dept.....	1878	1883
T. C. Thomas, T. E., adjunct professor of Math.....	1880	1881
Prof. Z. Whitney, A. M. LL. B., professor of Math.....	1881	1885
J. M. Morris, A. M. professor of Physics and Nat. Hist.....	1882	1883
Victoria G. Conkling, assistant in Prep. Dept.....	1883	1885
E. D. W. Eaton, B. S. professor of Math	1884	1888
W. G. Clark, B. S., assistant in Math. and Chem. and secretary Faculty.	1884	1887
E. A. Drake, A. B., instructor in Eng. branches.....	1884	
W. H. Echols, B. S. C., C. E., professor of Civil and Mine Engineering and Graphics, director in 1889.....	1887	
P. J. Wilkins, B. S., assistant in Acad. Dept.....	1887	
W. H. Seamon, B. S. A., professor of Anal. Chem. and Metal.....	1888	
W. B. Richards, A. M., professor of Math	1888	

ACADEMIC GRADUATES.

Degrees named so far as known.

Abbreviations see page 145.

1843.

- A. B. Robert B. Todd, A. M., l., Judge Sup.
Court of La.
Robert L. Todd, A. M., '45, b.

1844.

- A. B. Robert A. Grant, t.
James H. Moss, l. d.
Wm. P. Thomas, M. D., m., d.
John Wilson, l.

1845.

- A. B. William P. Clarkson, d.
Thos. J. Hardin, M. D., d.
Wm. W. Todd, M. D., m.

1846.

- A. B. William H. Allen, me.
Thompson Buruam, me., d.
John S. Clarkson, b.
Luther T. Collier, l.
Lewis T. Daneron, ag., d.
Odon Guitar, l.
John H. Moore, l.

1847.

- A. B. John Arthur, ag.
Alexander F. Denny, l. d.
Lewis B. Dougherty, b.
Robert W. McDaniel, l. d.
Henry C. Meredith, l.
James H. Parker, b., d.
Thomas B. Reed, l.
Frederick Russell
Middleton G. Singleton, ag.
James B. Thomas, M. D., m.
Milton G. Young, M. D., d.

1848.

- A. B. William Bentley.
James L. Howard, me.
Samuel S. Rice, ag., d.
William C. Shields, A. M., '51, t., d., 65.
James M. Wilcox, ag.
John F. Williams, l.

1849.

- A. B. Edward H. Burnam, A. M., '53, div.
James F. Campbell, ag.
Franklin Cave, t.
George F. Daugherty, ag.
John Flournoy, l.
Boyle Gordon, A. M., l., ag., Prof. M.
S. U.
John M. Gordon, l.
Asa N. Grant, t., d.
Boliivar S. Head, l.
Walter King, l., d.
Walter T. Lenoir, M. D., m.
Robert R. Provines, A. M., l.

1850.

- A. B. Charles B. Allen.
Calvin F. Burnes, l.
Lawson G. Drury, me.
James D. Head, l. d.
William S. Hyde, A. M., '53; LL. B.,
'53, l., d., '62, C. S. A.
Henry Slack, l., d., Gen. C. S. A.

1851.

- A. B. Charles H. Alison, ag.
T. B. Campbell, ag.
Henry Clay Cockerill, b.
James H. Halman, t.
Charles N. Parmer, M. D., m.
Sterling Price, Prof. M. S. U., d.
W. L. Shankling, M. D., m.
James H. Walker, ag., State Senator.

1852.

- A. B. Marcellus G. Gorin, A. M., '79, div.
Charles W. Jeffries, M. D., m. d.
Homer J. Luce, b., d.
James H. Reid, M. D. m.
Lanceford B. Wilkes, A. M., '56, div.
Peter S. Wilkes l.
S. B. R. B. Price, b.

1853.

- A. B. Joseph A. Browne, l.
John W. Finley, div.
John L. Hickman, ag.
Joseph L. Hutchinson, l.
Simon Kerl, author, ag., d., '76.
Robert E. Kiernan, m.
Leonidas M. Lawson, A. M., b.
James Love, ag.
George W. Miller, l.
John G. Provines, ed.
Samuel A. Ringo, div.
John DeW. Robinson, l.
Joseph K. Rogers, t., Pres. Chris. Col., d.
James R. Shields, l.

1854.

- A. B. John B. Bradley, t.
Marcellus Cave, l.
Newton Z. Guice, l., d., '64, C. S. A.
William M. Guice, M. D., '60, A. M., '81,
m.
Warwick Hough, l., ex-Judge Supreme
Ct., Mo.
William H. Lackland, l., d.
Lafayette McJilton
Lawrence Moore, d.
William R. Rothwell, A. M., '57, D. D.,
'74, Prof. W. Jew. Col.
Richard G. Woodson, l.

1855.

- A. B. Alex. M. Avera, t., d.
John W. Banks, M. D., m.
Fulton H. Bradford, b., ag.
Edward H. Cordell, me.
Julius C. Ferguson, ag.
Anthony L. Gusman, l.
Alex. Johnson, t.
Jonathan McGuire, div.
Joseph M. McKim, A. M., '75, m.
John C. Risk, A. M., '58, div.
James J. Searcy, t., d.
E. A. Starker, m.
William G. Thomas, l.
William H. Tucker, t.
Squire Turner, A. M., '57, l.
Francis Wilcox, ag., d.

ACADEMIC GRADUATES—Continued.

1856.

A. B. William Barr, d.
 William A. Buckner, t.
 William P. Ellis, me., d.
 Thomas M. Field, me.
 John J. Howe, d.
 George N. Searcy, t. d.
 Alex. P. Spence, M. D., m.
 Thomas H. Teagarden, ag.
 Cortes Tincher, t. d.
 Alexis Walmsley, l. d.
 George W. Wright, l. d.
 Edwin C. White, A. M., '85, t.
 Elisha T. White, ag., d.

1857.

A. B. Thomas F. Bell.
 Richard C. Borton, ag.
 Henry L. Durkee, l.
 Adrian C. Ellis, l.
 Jesse B. Ellington, l.
 Charleton H. Higbee, me.
 Newmerries A. Humbee, l.
 Henry C. Jones, ag.
 Bartley D. Palmer, l.
 Gideon F. Rothwell, l.
 Thomas P. Rothwell, A. M., 60 M. D.,
 '63, m.
 William J. Thompson, A. M., '59, LL.
 B., '60.

1858.

A. B. George M. Catron, l., t.
 John W. Harrison, me.
 Anthony Haynes, A. M., t.
 Edward L. King, l.
 Thomas B. King, t., div.
 Emilius P. Lampkin, t.
 William G. Provines.
 Howard H. Roache.
 John W. Sandusky, A. M., '73, t.

1859.

A. B. Robert N. Bodine, l.
 Robert J. Brooks, l.
 George W. Hyde, A. M., '67, div.
 J. B. Harrington, A. M., '70, p.
 James A. McBrayer.
 John M. Rucker, ag.
 W. W. Stone, me., Treas. of Miss.
 Addison A. Walker, A. M., '62, ag.
 Anthony W. Walker, A. M., '62, ag. d.,
 '65.

1860.

A. B. William H. Bassett, l.
 James J. Bassett, ag.
 Thomas B. Catron, l.
 Robert C. Carter, A. M., '86, m.
 Jerre C. Cravens, l.
 Stephen B. Elkins, A. M., l., b.
 Charles E. Leonard, ag.
 James A. Sullivan.
 Andrew J. Thomas, A. M., '77, M. D.,
 Editor.

1861.

A. B. Jesse H. Arnold, ag.
 Thomas F. Conway, l.
 James J. Hitt, l.
 William P. Jackman, ag.
 Thomas L. Napton.
 William S. Woods, A. M., '64, M. D., b.
 James H. Wright, l., Judge Sup. Ct.,
 Arizona.
 S. B. James A. Gordon.
 William G. Murphy.

1862.

A. B. William H. Burnham, div.
 David W. Graves, div.
 Joseph V. C. Karnes, A. M., '65, l.
 John F. Martin, div.
 T. T. Smith, l. d.

1863.

A. B. Henry N. Ess, l.

1864.

A. B. Andrew W. McAlester, M. D., Prof. M.
 S. U., m.
 William S. Pratt, A. M., ag't.
 S. B. Andrew M. Conway, M. D., '74, m.

1865.

A. B. John W. Cogwell, l.
 H. Clay Daniel, l.
 Sid. T. Hughes, ag., d.
 John H. Overall, l.
 Robert T. Prewitt, d.
 L. W. Scott, l.
 C. C. Torbitt, ag.
 S. B. James S. Preston, S. M., '70, m.
 Arthur P. Selby, S. M., '70, Clerk U. S.
 C't of Mo.

1866.

A. B. Daniel W. B. Kurtz, A. M., ag.
 S. B. Thomas P. Baskett, me.
 William C. Buntin, me.
 William A. Horner, me.

1867.

A. B. John T. Aldridge, m.
 B. Wood Badger, A. M., '70, ma.
 W. Lenoir Church, A. M., '70, l.
 M. Allen Elston, A. M., '70, div., t.
 Gardiner Lathrop, A. M., '70, A. B., '69,
 and A. M., '72, Yale; LL. B., '73, Har-
 vard, l.
 Lewis C. Nelson, A. M., '70, b.
 Edwin W. Stephens, A. M., '70, ed.
 S. B. Thomas A. Arnold, L. M., '71, M. D., m.;
 d., '78.
 J. Robert Evans, S. M., '78, p.
 Luke Evans, ag.
 William C. Grainger, S. M., '70, l.

1868.

A. B. Z. T. Arnold, A. M., '84, l.
 William A. Lientz, A. M., '71, ag.
 William H. Turner, A. M., '71, l.
 S. B. Richard Gentry, S. M., '71, b.
 Jacob S. Hamm, me.
 Givens R. Horn, p.
 Arch S. Robards, me., d., '79.

1869.

A. B. John W. Prather, m.
 Prosser K. Ray, A. M., '72, l.
 Bently H. Runyan, A. M., '72, LL. B.,
 '73, l., d., '72.
 S. B. John W. Baker.
 John G. Waples, l.

1870.

A. B. Shannon C. Douglas, A. M., '73, LL. B.,
 '73, l.
 S. B. Robert W. Dorsey, ag.
 Joseph C. Hearne, M. D., S. M., '81, m.
 Oliver Lee Houts, S. M., '80, l.
 Thomas J. Lowry, B. S., '70; M. S., '73;
 C. E., '78; Prof. M. S. U.
 Eli Penner, S. M., '80, l.
 Joseph F. Robinson, M. D., S. M., '80, m.

ACADEMIC GRADUATES—Continued.

1871.

- S. B. Cornelius M. Burgess, ag.
 James R. Baker, ag.
 Clark Graycroft, l.
 Allen Glenn, S. M., '75, l.
 Thomas E. Holland, M. D., m.
 Frank M. Houts, ag.
 John E. Johnson, S. M., '75, l.
 Jacob L. Ladd, S. M., '75, l, ed.

1872.

- A. B. Nelson W. Allen, A. M., '75, div.
 James W. Horner, M. D., m.
 Thomas A. Johnston, t.
 S. B. George F. Barr, M. D., m.
 Andrew M. Ellington, l.
 S. Anna Ware, S. M., '79.
 Ph. B. James N. Baskett, e.
 George F. Davis, A. B., '75, ed.
 Henry W. Ewing, Ph. M., Cl'k Sup. C't,
 ed.
 G. Bingham Rollins, ag.

1873.

- A. B. Joseph G. Anderson, cl., '69; N. G., '69;
 A. M., '77, l., d.
 James H. Dryden, A. M., '76, l.
 Randall Dryden, A. M., '77, l.
 S. B. William J. Babb, LL. B., '76, l.
 Abraham P. Barton, N. G., '73; S. M.,
 '77, l.
 George N. Elliott, S. M., '76, l.
 Robert Fagan, N. G., '73; LL. B., '75, l,
 d, '79.
 George E. Flood, Ag. B., '73; Ag. M.,
 '76, S. M., '80 s.
 Simon G. Forrester, M. D., m.
 Sarah J. Gentry, S. M., '76.
 Scott Hayes Ag. B., '73, S. M., '76; Ag.
 M., '76, br.
 Edward P. Horner, me.
 Jerrold R. Letcher, LL. B., '75; S. M.,
 '76, l.
 Turner McBaine, Jr., br.
 Jerome Moore, l., d., '75.
 Thomas J. Oliver, l.
 Stephen C. Rogers, Ag. B., '73; N. G.,
 '73, l.
 Lorin A. Staley, l.
 Robert F. Walker, S. M., '77, l.
 Ph. B. William L. Houston, Ag.

1874.

- A. B. Joseph T. Ridgway, D. B., '74, A. M.,
 '80, t.
 Julia F. Ripley, D. B., '74.
 Curtis B. Rollins, LL. B., '76, A. M.,
 '81, br.
 Charles A. Watkins, d. '74.
 Richard D. Shannon (cl., '62), A. M., '75;
 M. D., Ex. Supt. P. Schools, Mo., t.
 S. B. George H. Marlow, D. B., '74.
 Brutus Riggs, A. B., '75; A. M., '78, t.
 Frank Royse, l.
 Thomas C. Wilson, D. B., '74, e.

1875.

- A. B. George F. Davis, Ph. B., '72, ed.
 Brutus Riggs, S. B., '74; A. M., '78, t.
 Elgin L. Runyan, LL. B., '77; A. M.,
 '78, l.
 David McC. Wilson, A. M., '78, l.
 S. B. James F. Babb, D. B., '75; LL. B., '77;
 d., '77.
 Caleb L. Buckmaster, D. B., '75; S. M.,
 '79, t.
 Thomas C. Earley, S. M., '78, l.
 Frederick J. Miller, l.
 Winfield S. Timmons, LL. P., '78, l.
 Edward L. Welborn, t.
 Ph. B. Arthur W. Chamberlain, Ph. M., '78, l.
 Nap. B. Laughlin, l.

1876.

- A. B. Richard H. Stevens.
 John H. Wilson, A. M., l.
 S. B. Ida D. Aldrich, D. B., '76, S. M., '80, t.
 Henry B. Babb, Pe. B., '77, l.
 George W. Burroughs, me.
 Mitchell Castlio, t, ag.
 Sarah E. Dimmitt.
 Louis Hoffman, l.
 Nathaniel W. Halstead.
 Robert J. Orr.
 Frank F. Rozzelle, l.
 James S. Sherman, M. D., '78, m.
 L. B. Judson Duncan, div.
 N. S. William E. Payne, M. D., m.

1877.

- A. B. J. G. Babb, LL. B., '81, l.
 J. W. Beatty, Pe. B., '78; T. E., '79, e.
 Alexander E. Douglass, A. M., '80, t.
 Fielding W. Houchins, A. M., '80, div.
 S. B. James J. Collins, ag., t.
 John H. Field, S. M., '83, e.
 Trew Hayes, ag.
 William D. Johnston.
 Elijah Jones, M. D., '78, m.
 Wiley Jones, M. D., '78, m.
 Henry Edwin Sherman, ag.
 L. B. Robert P. Boulton, L. M., '80, ed.
 Arthur C. McChesney, LL. B., '78, l.
 Ph. B. Edward D. Phillips, t.

1878.

- A. B. Henry T. Curtright, agt.
 Frank B. Rollins, l., d.
 Lewis B. Wilkes, LL. B., '79, l., d.
 S. B. James P. Bates, C. E., '78, S. M., '81, e.
 Frank M. Brown, Pe. B., '78, l.
 Jonathan H. Davis, C. E., '78, S. M.,
 '81, e., t.
 Lizzie McD. Field, t.
 Mary N. Gentry, Pe. B., '78.
 Dulaney R. Kemble, Pe. B., '78, t.
 Frederick W. Kumpf, l.
 Ph. B. William B. Marshall, ed.

1879.

- A. B. W. Cowherd, C. E., '79; T. E., '79, br.
 Gordon N. Garnett, Pe. B., '79, l., d.
 Reuben B. Garnett, Pe. B., '79, l., br.
 R. W. Gentry, div., ag., A. M., '83, d.
 Lee Hayes, T. E., '79, e.
 John W. Leonard, Pe. B., '79, A. M.,
 '85, m., t.
 Mary E. Child, Pe. B., '79, S. M., '84, t.
 Ida Hayes, Pe. B., '79, S. M., '83, t.
 Samuel W. Simcoe, Pe. B., '79, t.
 Ph. B. James E. Crumbaugh, Ph. M., '83, l.
 Fannie P. Field.
 Laura A. Johnson, Pe. B., '79, d.
 Theo. L. Montgomery, Pe. B., '79, l.
 William W. Noffsinger, l.
 Joe Tapley, l.
 Edward J. Thomas, t., s.
 John W. Wade, Pe. B., '79, C. E.; e.
 L. B. Laura A. Banks.

1880.

- Clarence L. Diven, A. B., A. M., '83 div
 William G. Lovelace, A. B., l.
 Philip Bruton, A. B. div.
 W. M. Hodge, A. B., A. M., '83, t.
 George W. Johnston, A. B., l.
 Edmund Wilkes, A. B., A. M., '84, t.
 Josie B. Latham, A. B., A. M., '85, t.
 H. B. Hilgeman, Ph. B., Ph. M., '83, t.
 William F. Williamson, S. B., t.
 Wm. M. LaForce, A. B., A. M., '83, l.
 Joseph H. Drummond, A. B., A. M.,
 '83, Proctor and Sec. of B. C., M. S. U.
 James A. Jones, A. B., ed.
 Charles K. Sifton, Ph. B., t.

ACADEMIC GRADUATES—Continued.

Kate Hayes, A. B., A. M., '85, t.
 Charles E. Yeater, A. B., A. M., '85, 1.
 Jacob A. C. Freund, Ph. B., t.

1881.

James Black, A. B., A. M., '84, Prof. M.
 S. U.
 Joseph Payne, S. B., S. M., '84, e., ag.
 Willoughby C. Tindall, S. B., S. M.,
 '84, Prof. M. S. U.
 Walter E. Owen, S. B., 1.
 John Stubblefield, S. B., e.
 Charles H. Curtright, A. B., agt.
 Mary R. Moore, S. B.
 William S. Cowherd, A. B., 1., Ass't
 Pros. Att'y, K. C.
 Walker Bascom, S. B., 1.
 Nettie E. De Tray, S. B., t.
 Gustav Gehring, S. B., t.
 Cassius W. Christie, A. B., ed., agt.
 Louis Wagner, Ph. B., Ph. M., '85, 1.
 Charles P. Mitchell, S. B., e.
 Frank Sterne, S. B., S. M., '84, t., e.
 Henry H. Crittenden, A. B., br., Ass't
 Cl'k Co. Appeals, K. C.
 Frank S. Lonsdale, Ph. B., Ph. M., '84, t.
 John Swindle, S. B., t., ag.
 Jennie M. Banks, A. B., A. M., '85,

1882.

Frank Bauerlein, A. B., br.
 Robert M. Cook, S. B., ag.
 Lida Reed, S. B.
 John M. Taylor, S. B., e.
 Carrie C. Gamble, L. B.
 McGeehe D. Hulton, L. B., br.
 Andrew A. Bailey, A. B., 1.
 Lafayette Quarles, A. B.
 W. S. Williamson, S. B., e., ed.
 T. M. Bresnehan, S. B., ag.
 James H. Taylor, S. B.
 C. L. Mosley, L. B.
 John F. Williams, Jr., A. B., me.
 George E. Conrad, A. B., 1., Co. Att'y.
 Walter Hickman, A. B., ag.
 L. H. Otto, L. B., div.
 D. O'Mahony, A. B., d.
 Kate V. Lonsdale, L. B., t.
 Octavia Picklin, A. D. B.

1883.

John C. Leggett, A. B., 1.
 Robert T. Sloan, A. B., m.
 Paul Alexander, A. B., L. B., 1.
 Mary M. Gamble, L. B.
 William H. Brown, A. B., br., 1.
 Overton G. Ellis, L. B., 1.
 Robert H. Theilman, S. B., ag.
 Jacob Fink, L. B., t., 1.
 William E. Bryan, A. B., t.
 Samuel Daniels, S. B., t.
 Hanau W. Loeb, A. B., A. M., '86, m.
 Christopher C. Fawser, S. B., e.
 John J. Merritt, S. B., br.
 Edward D. Manring, A. B., t.
 E. E. Bass, L. B., t.
 John L. Chowning, S. B., t. s.
 Stephen A. Mitchell, S. B., e.
 James S. Snoddy, L. B., Ass't Lib'n, M.
 S. U.
 Maggie E. Bass, L. B.
 Sarah J. Field, L. B.
 Pryor C. Miller, L. B.
 Walter E. Boulton, S. B., 1.
 Ellena B. Carlisle, L. B.
 William S. Mosby, S. B., 1., Co., Att'y, d.
 Enos C. Pollard, S. B., e.
 Gretta Hayes, A. D. B.
 Mary E. Angell, A. D. B., A. D. M., '86.

1884.

Frank A. Youmans, L. B., 1.
 George W. Miles, S. B.

Benjamin F. Hoffman, L. B., Ass't Prof.
 M. S. U.
 Ernest A. Boeger, S. B., e., 1.
 James B. McBaine, L. B., ag.
 Albert M. Elston, S. B., Ag.
 George W. Coffman, L. B., m.
 John Kennish, L. B., 1.
 Joseph W. Williams, A. B., me.
 Robert A. Sullins, S. B., e.
 Henry J. Cox, A. B., t.
 Fannie L. Whittle, A. D. B.

1885.

Wm. E. Coons, A. B., 1.
 Will A. Rothwell, S. B., 1.
 Robin M. Johnson, S. B., b.
 Ernest E. Smith, S. B., br.
 Louis Theilmann, S. B., t.
 Washington S. Dearmont, A. B., t.
 Zannie M. Denny, S. B., t.
 Estelle V. Lewright, A. B.
 Thomas L. Rubey, A. B., clerk.
 Wm. P. Roberts, L. B., t.
 William Gerig, S. B., e.
 Wm. F. Means, L. B., LL. B., 1887, 1.
 Wm. W. Botts, L. B., LL. B., 1890, 1.
 Payne A. Boulton, L. B., t.
 Lucy W. Gentry, A. D. B.
 John C. Turk, L. B., 1.
 Eleanor Picklin, A. D. B.
 John S. Alexander, S. B., e.

1886.

Wm. J. Spillman, S. B., t.
 Ida M. Clendenin, S. B., S. M., 1889, t.
 Wm. W. Clendenin, S. B., S. M., 1889,
 Ass't Prof. M. S. U.
 James A. Smith, A. B., LL. B., 1887, 1.
 Firmin B. Wright, L. B., S. B., br.
 John A. Jaeger, S. B., e.
 Edward E. Longan, L. B., ag.
 Edgar D. Watson, A. B., t.
 V. C. Yantis, S. M., 1.

1887.

Henry W. Clark, L. B.
 Fredus N. Peters, A. B., Pe. B.
 Geo. R. Dodson, A. B.
 Anna Bates, A. B., Pe. B.
 George N. Cheney, A. B.
 James S. Stokes, S. B., Pe. B.
 Jefferson D. Carney, L. B., Pe. B.
 Isadore Loeb, S. B.
 Wm. W. Love, A. B.
 George W. Murphy, A. B., Pe. B.
 R. Gurdon Thompson, A. B.
 J. Lawrence Maupin, A. B.

1888.

John P. Flournoy, A. B.
 John W. Froley, S. B.
 Emil Theilmann, S. B.
 Orville H. B. Turner, S. B.
 Thomas A. Walker, L. B.
 Thomas E. McNeely, A. B.
 Robert W. Barrow, A. B.
 Elizabeth Smith, A. D. B.

1889.

Thos. J. J. See, A. B., L. B., S. B.
 Charles H. Stumberg, A. B., L. B.
 Curtis F. Marbut, S. B.
 Louis E. Pitts, A. B.
 Myron A. Corrier, S. B.
 Charles B. Faris, L. B.
 James T. Dick, S. B.
 Ulle B. Denny, S. B.
 George F. Youmans, S. B.
 Samuel D. Gromer, S. B.
 Elston H. Lonsdale, S. B.
 Mitchell C. Shelton, A. B.
 Sterling P. Dorman, L. B.

PROFESSIONAL GRADUATES.

1846.

M.D. Francis H. Edwards
 Wm. P. Keith
 Andrew J. Griffith
 Matthew H. Burchard
 N. A. Davis
 Wm. West
 Alexander Ross
 Wm. B. Adams
 Robert Kirkpatrick
 J. D. Tyler
 Samuel G. Maus
 Caleb S. Purkitt
 Samuel L. Carter
 Edward Rackliff
 Benj. H. Pierson
 John T. Hughes
 Charles A. Knapp
 Hush Ronalds
 Albert Holmes
 Alexander P. Dorris
 Wm. C. Warriner
 John L. Arnold
 Lewis H. Callaway
 George B. Winston
 A. Haynie
 Truman W. Tyler
 Samuel Buckner
 Jacob W. Rohrer
 David O. Glasscocke

Hon. Degree.

Dr. Augustus R. Knapp,
 Jerseyville, Ill.

1847.

John P. Allen
 J. Mc. Alexander
 Clinton Armstrong
 L. T. Brittingham
 Thomas L. Dorey
 Wm. A. Elder
 Jas. S. Gamble
 Thomas G. Gillespie
 A. M. Hurt
 John W. Hemphill
 John S. Hoff
 G. H. Hickman
 G. S. C. Harper
 Daniel D. Hunter
 Wm. M. Lawrence
 Milton H. Muldrow
 Samuel T. Meng
 Hiram Nance
 Lewis T. Pim
 R. C. Prunty
 James Phillips
 T. D. Porter
 Wm. E. Smith
 Chas. S. Strother
 James M. Shannon
 Francis Spaulding
 Wm. J. Tuckett
 Jesse C. Wear
 S. T. Watts

Ad Eundem.

Dr. Alfred Heacock.....

Hon. Degree.

Dr. Wm. Henley Duncan.
 Dr. Drane, Bowling Green.

1848.

M.D. John Nessamuk Arent,....
 Augustus F. Barnes
 W. W. Cottle
 T. E. Staples
 H. F. Steinhauer
 Jacob Tipton
 Burnell Thompson
 Littleton Tull
 F. N. Wells
 T. M. P. Whicklock
 George W. Williams
 Sparrell Woody
 Dryden Rogers
 C. F. Clayton
 John L. Davis
 John S. Dewey
 Marion Edmonson
 Joseph S. Evans
 L. T. Ferris
 John T. Fort
 G. E. Frazer
 Wm. H. Greene
 Barton W. Hall
 John L. Hallam
 Glen O. Hardeman
 John T. Hodgen
 Winthrop H. Hopson
 Peter K. Howe
 T. J. Irish
 B. H. Johnson
 Lewis Leach
 John Lightcap
 H. B. Logan
 Geo. M. B. Maughs
 E. G. B. McNutt
 Chas. H. Morton
 S. L. Platt
 Samuel Rixey

Ad Eundem.

Dr. William Bolton.....
 Dr. Washington Reynolds.

Hon. Degree.

Dr. Benj. Irish
 Dr. Zebena Conkey
 Dr. M. M. Maughs, d
 Dr. J. L. Holliday
 Dr. A. T. Crow
 Dr. John Rogers
 Dr. Theo. Shriner
 Dr. W. W. Bland
 Dr. J. B. McDowell
 Dr. W. S. Pearce
 Dr. E. S. Frazer
 Dr. Henry Schoeneich

1849.

M.D. John M. Angell
 M. F. Brown
 Joseph A. Barrett
 Richard F. Cunningham
 Ira B. Curtis
 Joseph N. Castlio
 D. C. Case
 David V. Cole
 Phil B. Chiles
 Phil T. Dimmitt
 Lavinus Dunham
 Jonathan Dearborn, Jr.
 John C. Fitz

George W. Fitch
 Alexander A. Groves
 Hugh J. Glenn, d
 Silas B. Giddings
 Chas. B. Gratiot
 Wm. J. Howell
 Charles A. Holliday
 William Jayne
 Abalom Hems
 Achilles Lamme
 Russell B. Lewis
 Robert R. Lynch
 James T. Matson
 T. P. Montgomery
 Charles E. Nash
 W. H. Nance
 Thomas O'Donnell
 Sherwood A. Owens
 Oliver B. Payne
 James Rainey
 Silas Richardson
 Elias C. Redman
 John G. Stewart
 E. M. Seely
 Wm. W. Todd

Ad Eundem.

William H. Burns, M. D. .
 S. S. Ransom, "
 John L. Taylor, "
 Freeman Knowles, "
 R. B. Brown, "

Hon. Degree.

Henry C. Wright
 J. W. Hollowbush
 G. Jayne
 W. B. Maxon
 Herod W. Hudnell
 George B. Rogers

1850.

M.D. Charles C. Allen
 Thomas Brooks
 Francis Carr
 John A. Davis
 Reese Davis
 Richard H. Duncan
 Chas. W. Dunning
 James Elliott
 John C. Farmer
 Granville H. Forkner
 William C. Gantt
 Matthew W. Garthright
 Daniel D. C. Greenleaf
 Joseph O. Hamilton
 Samuel J. Harrison
 Wm. S. D. Johnson
 James H. Kerr
 Thomas B. Lester
 Edw. B. Marshall
 Alanson Mosher
 Horace Newell
 Benjamin F. M. Packard
 Hail W. Pitman
 Thomas J. Primm
 M. M. Randolph
 John B. Relph
 Kendall E. Rich
 Samuel Riddill
 James A. Roman
 Chas. H. Rossiter
 James M. Thompson

PROFESSIONAL GRADUATES—Continued.

L. W. Upton.....
E. Worth.....

Ad Eundem.

J. M. Baker, M. D.....
J. J. R. Turney, M. D.....
Benj. F. Edwards, M. D.....

Hon. Degree.

Adams Nichols, A. M.....

1851.

M. D. LeGrand Atwood.....
Thos. L. Barnes.....
E. Y. Barret.....
John Brookie.....
Louis Bosse.....
Noah P. Butler.....
Theo. Case.....
Julius R. L. Clarkson.....
Geo. W. Connell.....
David L. Croysdale.....
Wm. T. Cox.....
James M. Davis.....
Wm. D. Dement.....
Jas. A. Gaines.....
Wm. W. Griswold.....
Jas. Goodyear.....
Francis B. Haller.....
Benj. A. Kellogg.....
Franklin F. King.....
Arch bald I. Lacy.....
Timothy Leeds.....
John L. Million.....
Caleb W. Phare.....
Jno. W. Ringo.....
Jas. R. Sands.....
Geo. H. Sherwood.....
Nelson R. Small.....
Wesley H. Sparks.....
Jesse R. Turley.....
Walter Witty.....
Fred A. Wilmans.....
Ed. F. Wood.....

Ad Eundem.

Louis A. Xaupi.....
J. W. Chenoweth.....
R. P. Timmerman.....
J. F. Atkinson.....
E. S. Look.....
N. Manning.....

Hon. Deg.

Clark Winston.....
Cyrus A. Davis.....

1852.

M. D. Joseph S. Atkisson.....
Richard H. Boatman.....
Ed. H. Bryan.....
Geo. W. Campbell.....
John W. Farley.....
Jno. T. Gilmer, Jr.....
Wm. Goff.....
Daniel B. Jones.....
Robt. G. Killebrew.....
Arthur J. Lett.....
Nicholas G. Leake.....
Nicholas B. Martin.....
David Mock.....
Erasmus D. Morrison.....
James J. Norton.....
Wm. C. Riley.....
Wm. G. Sale.....
Payton Spence.....
Richard H. J. Talbott.....
Joseph F. Thomas.....
James B. Walker.....
Lewis K. Wilcox.....

Ad Eundem.

A. B. Barbee.....
Greensburg H. Crockett.....
Jno. W. Chenoweth.....
Benj. T. Cavanaugh.....

Hon. Deg.

Jas. M. Clarkson.....
Jason Duncan.....

1853.

M. D. Albert Atherton.....
Beverly A. Barrett.....
Alfred S. Clinton.....
Geo. D. Elgen.....
Alfred L. English.....
Joel Dewitt.....
O. L. Johnson.....
James W. Johnson.....
W. S. Johnson.....
Jas. P. Harrison.....
Benj. D. Hocker.....
Robert Hummel.....
Jno. W. Keithly.....
W. F. Lamkin.....
Morris M. McCluer.....
Isaac D. McDowell.....
Wm. A. Rawlings.....
Thomas Ruby.....
David Skilling.....
Archibald B. Sims.....
Otto Von Schrader.....
John F. Snyder.....
N. B. Tucker.....
Wm. O. Torrey.....
Philander M. Parker.....
George Whiteside.....

Ad Eundem.

Sam'l P. Cutler.....

1854.

M. D. Isham R. Asbury.....
E. B. Bateman.....
R. A. Barrett.....
J. W. Bell.....
Sam'l Bender.....
Geo. M. Boal.....
R. L. Bullock.....
J. G. Blanks.....
J. G. Bryan.....
J. T. Brown.....
J. J. Crawford.....
Geo. H. Dewey.....
John T. Doovyns.....
Washington Dorrell.....
J. R. M. Gaskill.....
Chas. M. Gilkey.....
Wm. E. Henry.....
Grief. P. Herndon.....
Benj. F. Hughes.....
T. J. Jones.....
S. P. Jones.....
Thos. H. Kavanaugh.....
Benj. F. Kirby.....
Jas. A. Lindsey.....
Dudley H. Overton.....
James L. Perryman.....
John J. Rawling.....
Jas. T. Scott.....
C. P. Slater.....
Eben R. Stoner.....
Carolus F. Turner.....
Lewis Willis.....
Simeon A. Yeager.....
Charles L. Young.....

Ad Eundem.

Charles L. Anderson.....
Hugh R. Baker.....
Andrew J. Batson.....
Wm. W. Mayo.....

Chester Hard.....

Hon. Deg.

John Watkins.....

1855.

M. D. Alfred C. Baker.....
Algernon S. Barnes.....
Benj. N. Bond.....
Lemuel M. Cheek.....
James R. Douglas.....
Wm. P. Davis.....
Jesse R. Evans.....
Wm. B. Glover.....
Frank Hunter.....
Cuthbert T. Jones.....
Perez. L. Jennings.....
Wm. Lemmon.....
George H. Long.....
John L. Matthews.....
Wm. B. Maupin.....
John I. McDowell.....
Henry C. McPherson.....
Wm. M. Pettit.....
James G. Phillips.....
Peter A. Salling.....
Lyman B. Slater.....
I. W. H. Spann.....
I. L. Thomas.....
Alonzo V. Thorpe, d.....
James Thompkins.....
Wm. Wurfrey.....
David C. Wallace.....
Wm. Wickman.....

Ad Eundem.

Dr. M. G. Bryan, Sr.....
Dr. A. Parkhurst.....
Dr. I. W. Farmer.....
Dr. Jesse W. York.....

1856.

M. D. James T. Allen.....
Lucien L. Bedell.....
John H. Davis.....
Leonard A. Engle.....
Lewis Fay.....
John Fetzer.....
May B. Gorham.....
J. P. H. Gray.....
Moses Hubbard.....
James T. Means.....
John S. Murphy.....
Charles D. Nuckols.....
Ephraim M. Poage.....
Charles H. Pringle.....
James H. Rooney.....
Lucien M. Rhodes.....
G. G. Samuel.....
Richard L. Sullivan.....
L. A. Scott.....
Joseph T. Scott.....
Thos. Shastid.....
Robert Stewart.....
Henry Strafford.....
Joel G. Williams.....
Arnand L. Wynn.....
Calvin A. Wicks.....
Elisha E. Waggoner.....

Ad Eundem.

Dr. Jesse Y. Higbee.....
Dr. O. F. Potter.....

Hon. Deg.

W. W. Barret.....
Robert C. Chenoweth.....
Milton M. Latta.....

1860.

*D. Ag. J. H. Arnold, A. B., '61
Amos B. Cawbitt, d.....

PROFESSIONAL GRADUATES—Continued.

Jos. B. Davis, M. S., '73.
 Thomas H. Ferguson.....
 John C. Head.....
 John T. Heard, A. B. '61,
 1, (M. C.).....
 Andrew W. McAlester, A.
 B., A. M., M. D., m.,
 Prof. M. S. U.....
 W. G. M. Murphy.....
 Amos R. Phillips.....
 James D. Pulliam.....
 James H. Shannon.....
 Horace Walker.....
 James S. Walker.....
 Eugene B. Wells.....
 Arthur O. Slaughter.....

1869.

N. G. J. G. Anderson, 1.....
 James M. Conway.....
 George W. J. Crowe.....
 Eli Penter, 1.....

1870.

N. G. T. J. Lowry, t.....
 J. F. Robinson, m.....
 Lullie Gillette, d., '77.....

1871.

N. G. Clark Craycroft, 1.....
 Eliza Gentry.....
 J. R. Huffaker, m.....
 Leland P. Shidy, U.S.C.S.

1872.

N. G. Sue Callison.....
 A. T. Harrison.....
 Helen A. Packer.....
 Gertie C. Sewar t.....
 Samuel T. Swinford.....
 Wm. H. B. Trantham, ed.

1873.

D. B. A. P. Barton, t., 1.....
 James H. Dryden, 1.....
 Robert Fagan, 1, d.....
 Stephen C. Rogers, t., 1.....
 Ag. B. George E. Flood, t., s.....
 Wm. F. Forsha, d.....
 Scott Hayes, s., br.....
 Kossuth M. Lear, ag.....
 Stephen C. Rogers, t., 1.....
 LL. B. Shannon C. Douglas, 1.....
 Charles H. Montgomery.....
 Robert G. Ranney.....
 Bently Runyan, 1, d.....
 Lewis M. Switzer, 1.....
 Berry G. Thurman.....

1874

D. B. William J. Babb, 1.....
 George H. Marlow.....
 Joseph T. Ridgway, t.....
 Julia F. Ripley.....
 Thomas C. Wilson, e.....
 N. D. George W. Allison.....
 John G. Barkley.....
 John B. Cole.....
 George M. Deatherage.....
 Adelia A. Farwell, d.....
 Nathan F. Livingston.....
 Sarah M. Young.....
 D. H. Ida C. Alexander.....
 Wm. M. Alexander.....
 Sallie A. Burroughs.....
 Adolphus T. Carson.....
 Henry S. Claggett.....
 George W. Coffman.....
 Sallie N. Conrad.....
 Ella Cromwell.....
 Mary R. Cromwell.....
 Josiah L. Cummings.....

George W. Dimmitt.....
 Mollie Dougherty.....
 Mattie M. Edwards.....
 Adelia A. Farwell.....
 Trew Hayes, ag.....
 Laura A. Johnson, d.....
 Sue M. Matheny.....
 Joseph H. Mauvin.....
 Edmund S. Menard.....
 Eugene D. Ming.....
 Edward D. Phillips, t.....
 Julia F. Ruenzi.....
 Daniel J. Smith.....
 Charles L. V. Sweet.....
 Wm. R. Wikinson.....
 Sallie M. Young.....
 LL. B. Wm. Bell Bayley.....
 Simpson Cash Dyer.....
 David H. Eby.....
 Wm. H. Frisbie.....
 John H. Fristoe.....
 Thomas B. Gentry, br.....
 Carey H. Gordon, 1.....
 Irvin Gordon, 1.....
 George W. Hilburn.....
 Ora A. Keithley.....
 Jas. W. -ilaby.....
 Thomas F. Spencer.....
 Lyxander A. Thompson.....
 M. D. Andrew M. Conway, B.S.
 John H. Duncan, A. B., m.....
 Woodson Moss.....
 Wilsoo L. Ragan.....
 W. V. Smith.....

MINING SCHOOL.

C. E. Gustavus A. Duncan.....
 John Holt Gull.....
 M. E. John W. Pack.....

1875.

D. B. James F. Babb, d.....
 Caleb L. Buckmaster, t.....
 Thomas C. Earley.....
 Frederick J. Miller.....
 N. D. Frank R. Austin.....
 George W. Barlow.....
 John W. Beatty, e.....
 Philip Bruton, div.....
 John S. Bradley.....
 Nellie E. Gould.....
 Ella H. Houchens.....
 John Wm. Huffaker, m.....
 Theron M. Humphry.....
 Newton H. Lincoln.....
 William F. McQuitty.....
 Arthur Martin.....
 Robert N. Merrill.....
 Lloyd D. Mudd.....
 John J. Riley.....
 William E. Turner.....
 Luther M. Vallandingham.....
 John W. Wade, e.....
 D. H. Andrew B. Booth.....
 Auguste Hertich.....
 Ralph T. Graves.....
 Hugh I. Graves.....
 Thomas C. Lapsley, d.....
 Adolphus G. Scott.....
 Frederick Smith.....
 John C. Williams.....

LL. B. Francis K. Armstrong, 1
 August H. Bolte, 1.....
 Milton Burris.....
 Robert Fagan, B. S., 1, d.....
 Jerrold R. Letcher, B. S.,
 M. S., 1.....
 Elmuod Pendleton.....
 Henry J. Schoeneich.....
 Daniel Sullivan, d.....
 James A. Yantis, 1, Prof
 M. S. U.....
 M. D. William W. Ashley.....

William M. Daugherty....
 Philip L. Hyer, d., '75.....
 Harold Jerard.....
 Malcom D. Lewis.....
 David Strock.....

MINING SCHOOL.

C. E. Francis J. Dugan.....
 M. E. Almon W. Hare.....
 1876.

D. B. Ida D. Aldrich, t.....
 N. D. Sarah M. Gibbons.....
 Zellie C. Gillette.....
 Mary S. Hayden.....
 Kate Jackson.....
 Mary V. M. Lougeay.....
 Arthur B. Remley.....
 Worley L. Whittin.....
 D. H. Arthur B. Remley.....
 D. P. & C. Edward B. Hayes..
 LL. B. William J. Babb, 1.....
 Royal J. Burge.....
 Virgil M. Hines.....
 Curtis B. Rollins, br.....
 T. S. Rookwood.....
 William E. Sherwood, 1.....
 C. B. Sebastian, 1.....
 Walter Sydnor, 1.....
 Thomas B. Wheeler.....
 M. D. Oscar W. Avery.....
 W. Wirt Douglass, d.....
 Edwin F. Evans.....
 Tyson D. Evans.....
 James F. Feaster.....
 A. W. Graham.....
 James W. Hagan.....
 Wm. E. Jones.....
 Wa ter T. Lemon, m.....
 Harvey Walley.....
 Joseph W. Pryor.....
 William R. Tipton, M.....
 Charles T. Varnon.....

MINING SCHOOL.

C. E. Cyrus H. Emerson.....
 John E. McGrath.....
 M. E. Oscar E. Graven.....
 John D. Greason.....
 William C. Minger.....

1877.

Pe. B. Henry B. Babb, B. S.,
 '76, 1.....
 Pe. P. Irvin Maupin.....
 James M. Potter.....
 James A. Rathbun.....
 Frank O. Shepard, ag.....
 Frank H. Taylor.....
 George W. Wren.....
 D. H. George W. Clawson.....
 Canby Hawkins.....
 Joseph T. Payne, e., ag.....
 James A. Rathbun.....
 Gerard R. Walker.....
 John F. Young.....
 John B. Rea.....
 LL. B. George W. Allison.....
 Omer H. Avery.....
 James F. Babb, d., '77.....
 William L. Beacock.....
 Pleasant D. Hastain.....
 James B. Harrison.....
 William M. L. Irvin.....
 Louis L. Kirk.....
 Robert B. Oliver, 1.....
 John W. Peebles.....
 John W. Quisenbury.....
 John DeW. Robinson, i.....
 Elgin L. Runyan, 1.....
 Warren Switzer.....
 M. D. John T. Butler.....

PROFESSIONAL GRADUATES—Continued.

George I. Cason
M. F. Moore
William R. Smith
E. P. Tally

MINING SCHOOL.

C. E. Thomas E. Milsaps
M. E. A. H. Ohmann-Dumesnil
James A. Pack

1878.

Pe. B. John W. Beatty, e.
Frank M. Brown, I., Rep
Mo. Sup. Ct
Dulaney R. Kemble
Mary N. Gentry
Pe. P. William M. Britt
Jacob A. C. Freund, t.
George E. Gray
George W. Gillum
Henry B. Hilgeman, t.
Charles E. Jones
John J. Kearney
John T. Lawless, d.
Charles D. Rogers
Asa L. Ross
Orlando V. Slaughter
Louis Q. Starke
John N. Short
William A. Steere
John R. Vandiver

LL. B. Calvin V. Buckley
Landon W. Campbell
Richard P. Craven
James B. Forrester
Samuel T. Harrison
Robert A. Hicklin, I., 34th
and 35th G. A. Mo.
Albert H. Jamison, A. B.
Collin B. Kemble
Thomas N. Lavelock, I.
Joseph H. Maupin
Arthur C. McChesney, S.
B. I
Evan P. McDonald
Chilion Rilev
William J. Roberts
John A. Russell, d. May,
1878.
Robert Shackelford
W. Scott Timmons, S. B.,
I., County Attorney
John Q. White, A. B.
William B. Wilson
George W. Wren
M. D. Henry Green Caples
Franklin Canthorn, m.
William H. Douglass, m.
Jerome D. Potts
Elijah Jones, S. B., m.
Wiley Jones, S. B., m.
William B. Lucas
Jas. S. Sherman, S. B., m.

Mining School.

C. E. Lindsey Coppedge, Jr.
W. Y. Bean
M. E. Lee R. Graybill
Wilton R. Brown
C. E. James P. Bates B. S., '78, e
Jonathan H. Davis, B. S.,
'78, e, t.

1879.

Pe. B. Mary E. Child, S. B., '79, t
Gordon N. Garnett, A. B.,
'79, I., d.
Reuben B. Garnett, A. B.
'79, I., br
Ida Hayes, S. B., '79, t.

Laura A. Johnson, Ph. B.,
'79, d.
John W. Leonard, A. B.,
'79, m
Theo. L. Montgomery, Ph.
B., '79, I.
Samuel W. Simco, S. B.,
'79, t.
John W. Wade, Ph. B.,
'79, e.

Pe. P. John T. Bottom, I.,
Thomas Foley
Fannie Garth
Kate Mahan
Joseph T. Payne, e., ag.
Minnie Russell
Austin Shepard, ag.
Nettie Summers, t.
William F. Williamson, t.

D. H. Charles B. Lawless, d.
Walter T. Russell, ag.
Austin H. Shepard
John L. Stubblefield, e.
John F. Wilhite, ag.
LL. B. Frank A. Boehmer
George W. Clawson, ed.
Fletcher Cowherd, br
William Henry Davis
John A. Gilbreath, e.
Theron Martin Humphrey
William Henry Miller
John Breckenridge Rea, I.
Edward Robb, I., assistant
Att'y-Gen'l, Missouri.
Albert Edgar Ross
William Edwin Turner
Edward Gibson Taylor, I.
Lewis Bryan Wilkes I., d.

M. D. John A. Lowry, m.
Warren R. LaForce, m.
Walter Lee Guerrant
Charles Thomas McLean
William F. McQuitty, m.
John S. Miller
C. E. George F. Bird, U. S. C. S.
Walker Cowherd, e., br.
Henry B. Davis, e.
Frank H. Hoffstrom, e.,
Co. Sur.

T. E. John W. Beatty, e.
George F. Bird, U. S. C. S.
Walker Cowherd, e., br.
Henry Bascom Davis, e.
C. L. Harrison, e., me.
Lee Hayes, e.
Frank H. Hoffstrom, e.,
Co. Sur.
Winfield S. McKinney

MINING SCHOOL.

C. E. R. C. Hoyer
M. E. Charles F. Winters

1880.

LL. B. William T. Pigott
J. J. Russell, I., Speaker
Mo. G. A. 35th.
Jesse C. Sheppard
Robert P. Wilson
John Gagnon
Francis M. Smith
Francis P. Blair
Frederick H. Austin
Walter D. Penney
William A. Bowser
James L. Sheetz, I.
Uriah G. Phetzing
Thomas T. Loy
T. E. C. L. Harrison, e., me
Hiram Phillips, assistant
professor M. S. U.
Joseph L. Phillips, e.

Thomas C. Thomas, e.
C. E. Eben D. Green
Charles L. Harrison
Lee Hayes, T. E., '79.

Pe. B. Henry B. Hilgeman, Ph.
B., '80.
William A. LaForce, A.
B., '80
Wm. F. Williamson, S. B.,
'80, m.
Charles K. Sitton, Ph. B.,
'80.

Jas. A. Jones, A. B., '80, e
Kate Hayes, A. B., '80, t.
Pe. P. Rufus Gillaspay, m.
William A. Taylor
David Calbreath
Jennie C. Nattrass
Andrew R. Lyon, I.
Noland Taylor
George H. Nichols
L. P. Starke (Class of '78.)

M. D. Justus Ohage
Henry D. Grady
Millard P. Sexton, m.
Clinton H. Lubbock
George E. Muns
William M. Moore
Bennett H. Clark, Jr.
Benjamin F. Carr
Charles W. Chastain

SCHOOL OF MINES.

M. E. L. X. Smith
A. C. Carson

1881.

LL. B. David S. Alkire
Henry T. Alkire, B. S. D.
Henry B. Babb, S. B., I.
Jere G. Babb, A. B., '77, I.
Robert H. Beasley
John T. Bottom, I.
Al. Chapman
John B. Cole
James E. Crumbaugh, Ph.
B., '79.

James R. Davis
Joseph S. Denny, br.
Thomas R. R. Ely, I., 34th
Gen. A. Mo.
Henry S. Evans
William S. Herndon
Ligh H. Irvine, I.
John F. McGaughey
Frank P. McGhee
Edwin H. Peery, A. B.
Thomas A. Pharis
Joseph H. Rodes
Andrew J. Smith
Horace A. Smith
Edwin D. Shackelford
Walter S. Shackelford
Joe Tapley, Ph. B., '79, I.
Dewit C. Taylor
Robert H. Taylor
James Wingfield

M. D. Oliver Bagby
James Gordon, m.
J. E. Harris
F. B. Roberts
M. E. Doolittle
Ag. B. John L. Stubblefield, S.
B., e.

Pe. B. Frank Sterne, S. B.
Frank S. Lonsdale, Ph. B.
John Swindle, S. B., t. ag.
Pe. P. J. B. Gaudin
Samuel Daniels, I.
J. T. Cross
M. C. Lucky
J. W. Heskett, I.

PROFESSIONAL GRADUATES—Continued.

1884.

Fannie C. Davis.....
A. W. Lyon, I.....
W. R. Sivey.....
Kate Quayle.....
C. D. Walker.....

ENGINEERING COLLEGE.

Franklin E. Guild, S. B.,
T. E., e.....
Charles P. Mitchell, S. B.,
'81, T. E., C. E., e.....
Joseph T. Payne, S. B., '81,
C. E., T. E., e., ag.....
William L. Seddon, T. E.,
e.....
John L. Stubblefield, S. B.,
'81, C. E., T. E., e.....
George E. Flood, Ag. B.,
'73, Ag. M., Sur., t., s.....

SCHOOL OF MINES.

C. E. Lorix X. Smith.....
Edward B. Summers.....
M. E. Walter W. Wishon.....

1882.

LL. B. George W. Acton.....
Robert M. Bagby.....
Walker Bascom, S. B.,
'81, I.....
Alex. D. Bell.....
David J. Briggs.....
John D. Crisp, ed.....
William S. Cowherd, A. B.,
'81, I.....
John B. Davis.....
Samuel E. Davis.....
Winfield S. Essex, I.....
Forrest G. Ferris, I.....
Walter D. Gerard.....
North East Jones, I.....
John S. Jurey.....
Joseph T. King, I.....
Lamoureux N. Kennedy.....
George W. Lavelock, I.....
Harry O. Lyford.....
Robert G. Robinson.....
George W. Wright, I.....
Ag. B. Ernest A. Boeger, e.....
Levi Chubbuck, M. Ag. S.,
'85, Sec. S. Bd. Ag.....
George Fowlston, d.....
G. C. Husmann, M. Ag. S.,
'85, ag.....

Pe. B. James H. Taylor, S. B.,
George E. Conrad, A. B.,
Kate V. Lonsdale, L. B.,
Pe. P. James M. Pennington.....

Anne L. Burroughs, t.....
Willis C. Holman.....
George R. Henderson, I.....
John T. Grigsby, Co. Sur.....
Anna M. Murphy, t.....
Sallie H. Gray.....
Lucy J. Taylor.....
M. D. B. F. Wilson, m.....
S. A. Gremp.....
William Kemble.....
A. C. Winn.....
W. P. Wilcox.....
B. M. Sutton.....
W. H. Lougeay, m.....

ENGINEERING COLLEGE.

James A. Seddon, C. E., T. E.,
e.....
J. M. Taylor, S. B., C. E., T.
E., e.....
Frank C. Armstrong, C. E., T.
E., e.....

W. S. Williamson, S. B., C. E.,
T. E., e.....
Chas. W. Connor, Surveyor, s.....
Frank Sterne, S. B., Pe. B., C.
E., T. E., t. e.....
John H. Walker, C. E., T. E., e.....
Thomas P. Alford, Surveyor, e.....
Granville Butler, Surveyor, Co.
Sur.....
Robert P. Henderson, T. E., e.,
Co. Tr.....

SCHOOL OF MINES.

Frank W. Gibb, C. E., M. E.....
Beauregard Ross, M. E.....
William R. Painter, C. E., Co.
Sur.....
Ashuah B. Schrantz, C. E., e.....
Herman N. VanDevander, C. E.
James A. Wash, C. E.....

1883.

LL. B. Milton C. Birney, I., d.....
Marshall P. Blackburn, I.....
John J. Campbell, d.....
Willard P. Cave, I.....
George E. Conrad, I.....
Millard F. Hudson, (clerk)
James O. Miller.....
Frederick Moesser.....
William Palmer, I.....
David W. Porter.....
Fox Spragins, d.....
Clifton R. Thompson, I.....
Hiram B. Kelley, b.....

Pe. B. William E. Bryan, A. B.,
Samuel Daniels, S. B., t.....
Hannau W. Loeb, A. B., m.....
J. L. Chowning, S. B., d.....
James S. Snoddy, I. B., t.....
Pryor C. Miller, L. B.....
Ellena B. Carlisle, L. B.....
Williams S. Mosby, S. B., d.....
John J. Meritt, S. B.....
Edward D. Manring, A. B.....
Mary E. Angell, A. D. B.....
Pe. P. Benj. F. Hoffman, Ass't.....
Prof. M. S. U.....
Samuel D. Gromer, t.....
James H. Hatton, t.....
William M. Butler.....
Jefferson D. Heady, t.....

M. D. C. R. Stierberger.....
J. L. Rollins.....
C. C. Browning.....
R. C. Cottingham.....
G. W. Lawhorn.....
W. A. Norris.....
J. M. Edwards.....
B. F. Bush.....
C. J. Blackburn.....

ENGINEERING COLLEGE.

Sterling P. Reynolds, C. E., e.....
Stephen A. Mitchell, C. E., i.....
Enos C. Pollard, C. E., e.....
Christopher C. Fawcett, C. E., e.....
John L. Chowning, C. E., t., s., d.....
Bathurst Smith, C. E., e.....
J. M. Cooper, C. E., e.....
Thos. P. Alford, Top'l Engin'r, e.....
James B. Gass, Surveyor, s.....
M. D. Harrison, Sur., e., d.....
Wm. W. Penny, Surveyor, e.....
Carleton W. Sturtevant, Sur., e.....
Zachary Taylor, Surveyor, s., e.....
Oliver P. Devin, Sur., st., m. s. u.....

SCHOOL OF MINES.

Floyd Davis, C. E., M. E.,
Ph. D., Ithaca, N. Y.....

LL. B. Henry S. Booth, I.....
John C. Bowman, I.....
George W. Chapman, I.....
Joseph W. Caldwell, I.....
Charles M. Curran.....
Levi Engle, I.....
Thomas Turner Hinde, I.....
Pope Higgins, I.....
Charles M. Holt.....
Wm. H. McCague, I.....
Fred. Quickenstedt, I.....
Alfred B. Wheeler, I.....
John B. Yakey, I.....
John D. Young, I.....
M. D. Christopher C. Morris.....
Bronislaw J. Nowierski.....
Sylvester Ragan.....
Charles Wm. Reagan, m.....
B. A. S. Henry J. Cox, A. B.....
Dennis H. Connaway.....
Howard Dorsett, st.....
Beverly T. Galloway, ag.
dep't, Washington, D. C.....
North T. Gentry, I.....
Pe. B. Benj. F. Hoffmann, L. B.....
John Kennish, L. B.....
J. W. Williams, A. B., me.....
Robert A. Sullins, S. B., c.....
Henry J. Cox, A. B., t.....
E. A. Boeger, S. B., C. E.....
Geo. W. Coffman, L. B.....
Pe. P. William M. Godwin, ed.....
Mary E. Ammerman.....
Earl W. Chapman.....

ENGINEERING COLLEGE.

Ernest A. Boeger, S. B., C. E., e.....
Edward E. Wall, C. E., e.....
Ernest E. Smith, C. E., br.....
Robert A. Sullins, C. E., e.....
Robert F. Grady, C. E., e.....
Henry H. Pendleton, Surveyor, s.....
Charles Jaeger, Surveyor, m.....
Julius H. Stowe, Surveyor, e.....
Tyra C. Hughes, C. E., e.....
John J. Sanders, Top'l Eng'r, e.....
Edward C. Anderson, Surveyor.....
Vard H. Hulen, Surveyor.....
Geo. C. Haydon, Top'l Eng'r, e.....
John W. Morris, Top'l Eng'r, e.....
Thomas C. Thomas, Top'l Eng'r,
'80, C. E., e.....
Wm. L. Seddon, Top'l Eng'r,
'81, C. E., e.....
James W. Malone, C. E., t., s.,
Carleton W. Sturtevant, Military
Eng'r, C. E., e.....

1885.

LL. B. Alonzo M. Burnes, d.....
Joseph M. Clary.....
Sterling P. Dorman, st.,
m. s. u.....
John C. Ewing, I.....
Thomas N. Haynes, I.....
George L. Horine, I.....
Albert W. Lyon, I.....
Joe McGregor, I.....
Thomas J. McMillan, I.....
James T. Neville, I.....
Samuel A. Payne.....
Henry P. Wood, t.....
Robert C. Prewitt, I.....
Thomas C. Reed, I.....
William Robb.....
Robert L. Rowden, I.....
Robert S. Rutledge, I.....
Samuel S. Shull, I.....
Cornelius H. Skinner, I.....
John A. Snider, I.....
William P. Taylor.....
James McP. Thomas.....

PROFESSIONAL GRADUATES—Continued.

J. W. Tinchler, l., co att'y.
 M.D. Zach Brainerd
 John M. Davis
 Lorenzo D. Hartley
 William H. Miller
 Pe. B. E. E. Smith, S. B., br.
 W. S. Dearmont, A. B.
 Zannie M. Denny, S. B., t.
 Wm. P. Roberts, L. B.
 W. F. Means, L. B. st., l.
 P. A. Boulton, L. B., ag.
 Lucy W. Gentry, A. D. B.
 John C. Turk, L. B.
 Gretta Hayes, A. D. B.,
 '83, t.
 Pe. P. Fredus N. Peters, t.
 Solomon Henricks, t.
 Carl A. Hunsman
 Hattie S. Bumbarger
 Charles C. Dimmitt
 Richard H. Emberson, t.
 James M. Rouse
 Joseph T. White
 Joseph Frazier, Cadet U.
 S. Mil. Acad.
 Benjamin F. Simcoe
 Daniel Kaufman
 William F. Pigg
 George W. Murphy, t.
 Edward E. Smith

ENGINEERING COLLEGE.

Walter S. Williams, C. E., e.
 Julius H. Stowe, C. E., e.
 R. H. Phillips, Top'g Eng'r, e.
 John T. Grisby, C. E., e., co. s.
 Marcellus D. Harrison, C. E.,
 e. d.
 J. S. Alexander, S. B., C. E., e.
 John W. Wade, Ph. B., '79, C.
 E., e., city eng'r
 Lucius R. Lewis, Surveyor, t., s.
 Byron B. Beery, Surveyor, e.

1886.

LL. B. Joseph Barton
 James L. Bishop, l.
 Columbus P. Caldwell, l.
 Louis V. Clark, l.
 Edwin J. Deal, l.
 Henry M. Houston
 Frank R. Jesse, l.
 Jason N. McElvain, l.
 Merit M. Sheets
 Robert Walker, l., Co. At.
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 Theophilus L. Carns
 E. H. Crowder
 Nelson C. Gallimore
 Thomas F. Hurd, l.
 Wm. B. Linney, l.
 John C. McKinley, l., Co.
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 Chas. F. Strop, l.
 James H. Whitecotton, l.,
 Ass't Co. Att'y.
 M.D. Wm. H. Mason
 James M. Alexander
 D. W. Bosserman, m.
 B.A.S. Henry J. Waters, ag.
 Pe. B. Firmin B. Wright, S. B.,
 br.
 Edward E. Longan, L., B.
 Pe. P. Luther M. Defoe, t.
 John W. Boulton, div.
 Charles D. Huxthal
 David H. Harris, l.
 Robert Morris
 William T. Johnston, t.
 James S. Stubblefield
 Henry W. Elliott, d.
 Agnes S. Rankin

Pe. P. Emil Theilman, ag.
 James Y. Dick
 Robert E. Downing, t.
 John W. Frole, t.
 Edward B. Wiggington
 Wm. J. Tom
 Rufus S. Kathan
 Robert J. Hodge, t.
 Kate Sterne
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 James E. Garrett, C. E., e.
 Benjamin Buscher, Surveyor, e.
 Lee P. Roberts, Surveyor, s.
 Wm. Gerig, S. B., '85, C. E., e.
 Wm. P. Hardesty, C. E., e.
 David Nowlin, Surveyor, s.
 North T. Gentry, Surveyor, l.

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 J. S. Brierly
 B. F. Cox
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 R. H. Davis
 F. R. Dearing
 F. H. Dexter
 G. F. Estes
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 Norwood Fitch
 G. W. Goad
 J. C. Growney
 D. H. Harris
 L. B. Hart
 J. J. Hendrick
 William Mack
 W. F. Means
 J. F. Murry
 Will Parmelee
 H. M. Stephens
 J. L. Stephens
 C. B. Robinson
 O. H. Robinson
 J. A. Smith
 W. H. Truitt
 N. B. Welch
 E. U. Western
 J. F. Wharton
 W. N. Wharton
 T. L. Wills

Pe. B. Fredus N. Peters
 Anna Bates
 James S. Stokes
 Jeff. D. Carney
 Geo. W. Murphy
 M. D. C. H. Craig
 W. P. Dysart
 J. O. Grubbs
 Von H. Gremp
 R. L. Hopper
 Paul Paquin
 R. J. Smith
 G. W. Stiffler
 G. P. Smith

Pe. P. Robt. E. L. Sutton
 Wm. W. Buckner
 Edgar F. Fielding
 Thos. H. Jenkins
 Geo. H. Beasley
 Louise H. Harris
 Robt. L. Reid
 Wm. C. Duncan
 Lulu Baumgartner
 Wm. B. Murrell
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 Geo. G. White
 Thos. H. Sturgeon

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 Harvey Dunn, Sur.
 Sanford C. Hunt, Sur.
 Robert E. Downing, Sur.
 William B. Murrell, Sur.
 Archie M. Rife, Sur.
 Arthur L. Campbell, Sur.

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LL. B. Thomas L. Anderson
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 Ira M. Becker
 William E. Billups
 Walter E. Boulton
 Jefferson D. Carney
 Eugene J. Carsow
 William H. Clark
 Kirk G. Comfort
 Albert S. Cowden
 Patrick H. Cullen
 Edward J. Fanning
 Charles H. Finegan
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Pe. P. George L. Brown
 Joseph F. Paxton
 Elizabeth Simonson
 Robert O. Ruark
 Wm. H. H. Weaver
 August H. Kuse
 John H. Kelley
 Louis Gray
 Joseph B. March
 Julia Rochford
 Lawrence A. Martin
 Frank Spoker
 John E. Dorman
 Joseph L. Russell
 Rufus S. Kathan
 John W. Ross
 Phillip E. Gerber
 Claudia F. Sparks
 Robert E. Darby
 Kate Sterne
 Leora Graves
 Laura V. Long
 Stewart P. Hatton
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 Louise Rochford
 Helena G. Hastings
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 Odon Grace

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Robert F. Schofield.....	Robert T. Haines.....	Minnie A. Pettingill.....
Judson W. Smith.....	Frank M. Howell.....	Eva Liggett.....
Thomas A. Walker.....	Thomas H. Jenkins.....	Anna M. Reed.....
Benjamin S. Wilson.....	Charles F. Keller.....	Carrie Maurer.....
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Charles Jaeger.....	Joseph J. Reynolds.....	Ida M. Knepper.....
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John T. Garrett, Top'l Eng'r..	William H. Young.....	Noah E. Sutton.....
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Joseph L. Moore, Surveyor.....	George J. Field.....	Jennie L. Hall.....
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<i>laude.</i>	Pe. B. Ulie B. Denny, S. B....	John T. Garrett, C. E.
Geo. A. Dabbs, <i>cum laude.</i> ...	Samuel D. Gromer, S. B....	Alexander Maitland, C. E....
William K. Amick.....	Myron A. Corner, S. B....	Wm. F. Seidel, C. E.
Rudolph Baha.....	James T. Dick, S. B....	Kerby C. Weedon, C. E....
Marion R. Biggs.....	Elston H. Lonsdale, S. B....	O. H. B. Turner, Top'l Eng'r..
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CALENDAR.

1890.

September 9, Tuesday.....	All Academic and Professional Schools (except Law School) open.....
October 1, Wednesday.....	Law School opens.
November 1, Saturday.....	Athenæan Society open session.....
November 15, Saturday.....	Union Literary Society open session....
December 13, Saturday.....	Open session of Bliss Lyceum.....
December 20, Saturday.....	Close for holidays.....

1891.

January 3, Saturday.....	Reopen.....
January 10 to January 24.....	Examinations at close of first Semester..
January 26, Monday.....	Second Semester begins.....
January 31, Saturday.....	Junior Medal contest.....
February 14, Saturday.....	Exhibition of Young Ladies' Society....
February 21, Saturday.....	Societies appoint prize declaimers.....
March 21, Saturday.....	Inter Society contest.....
April 11, Saturday.....	Prize Declamation contest.....
April 18, Saturday.....	Contest for Stephens Medal.. ..
April 25, Saturday.....	Exhibition of Union Literary Society...
May 9, Saturday.....	Exhibition of Athenæan Society.....
May 25 to June 4.....	Final Examinations.....
May 31, Sunday.....	Baccalaureate Discourse.....
June 1, Monday.....	Law Commencement.....
June 2, Tuesday.. ..	Curators meet.....
June 2, Tuesday.....	Address before Societies.....
June 3, Wednesday.....	Oration before Alumni.....
June 4, Thursday.....	Commencement.....
June 11, Thursday.....	Commencement School of Mines at Rolla.

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FIRST ANNUAL REPORT

OF THE

YOUNG MEN'S CHRISTIAN ASSOCIATION

OF

MISSOURI STATE UNIVERSITY.

COLUMBIA, Mo., June 5, 1890.

On the 17th of January, 1890, a meeting of students of the Missouri State University was addressed by the Rev. Dr. Marquess, President of Westminster College, Fulton, Mo.; T. S. McPheeters, of St. Louis, and F. H. Jacobs, State Secretary of the Young Men's Christian Association of the State of Missouri, who came for the purpose of establishing a branch of the College Young Men's Christian Association.

The movement met with marked favor, and within a week officers were elected, committees appointed and the organization completed; and the Missouri State University swung into line with one of the greatest religious movements of the nineteenth century.

A committee was appointed by the President of the Association to see the Executive Board of the Board of Curators for the purpose of having a room assigned where we could hold our meetings. The Executive Board of the Board of Curators received our committee very generously, and we were assigned a room. The Board of Curators did all in their power to assist in furnishing this room, which was bare of furniture; but their funds being low, we had to apply ourselves diligently to work to complete

the room. Committees were appointed for the purpose of soliciting subscriptions from students, faculty and towns-people. All responded generously, and we take this opportunity of thanking everybody who has assisted us for their kindness and sympathy. With the money thus raised the room has been furnished handsomely. The walls and ceiling are papered and decorated, and the floor is covered with a Brussels carpet ; the chairs are folding chairs of very comfortable pattern. We have an organ to assist in the music ; which, however, is a rented instrument. There is also a very fine stove in the room, the gift of the Executive Board of the Board of Curators. Without doubt, we have one of the neatest and most comfortable halls imaginable. The dedication services of this hall took place on Sunday afternoon May 18th. The ministers of all the churches in town took part in these services, together with the presidents of the two female colleges in Columbia, and some of the faculty of the university. The hall was filled to overflowing with students and visitors, and everybody took a deep interest in the services, which lasted for one hour and a half.

Our membership has steadily increased, and now numbers 100, and the prospects for the future are very bright. We earnestly ask the attention of all to our work here. Our sole field of labor is amongst the students of the Missouri State University ; and we would respectfully ask parents and others to notify us of the coming of their sons and those in whom they are interested, so that we may give them the warm hand of fellowship, and greet them in the name of brothers and as brothers ; and we would ask of you to urge upon them to identify themselves with us immediately upon their arrival—to show their colors and stand by them.

We earnestly ask the prayers of all Christian people of this state, that our efforts for the salvation of the souls of the young men students of this institution may meet with great success. We have taken for our motto : "The Missouri State University for Christ and Humanity."

We are not alone in this College movement of the Young Men's Christian Association. There are 308 of these College Associations in the United States and Canada, with a membership of 21,000. Many, through the kindness of munificent persons, have splendid buildings specially devoted to this cause ; and it is our ambition and hope, that one day, in the near future, a building will grace our campus devoted to the interests of this movement. The generosity of the people of our state is no less than that

of other states ; and we are sure, when the object is known, those whose hearts God has touched will see here a place to invest some of the money God has blest them with, and be willing to wait his time to receive their interest in precious souls saved to Christ.

We have had this year several Bible classes organized for such a study of the Bible as would enable the members to do personal work among the unconverted. We sincerely hope that this division of the work will be extended and vigorously pushed next year ; as in this personal work lies the great power of the Association.

Our expenses for the university session of 1890 and '91, including the fitting up of a gymnasium, will probably be from \$650 to \$700, of which amount the students will subscribe one-sixth, and the remainder must be raised by public subscription, to which fact we call your kind attention.

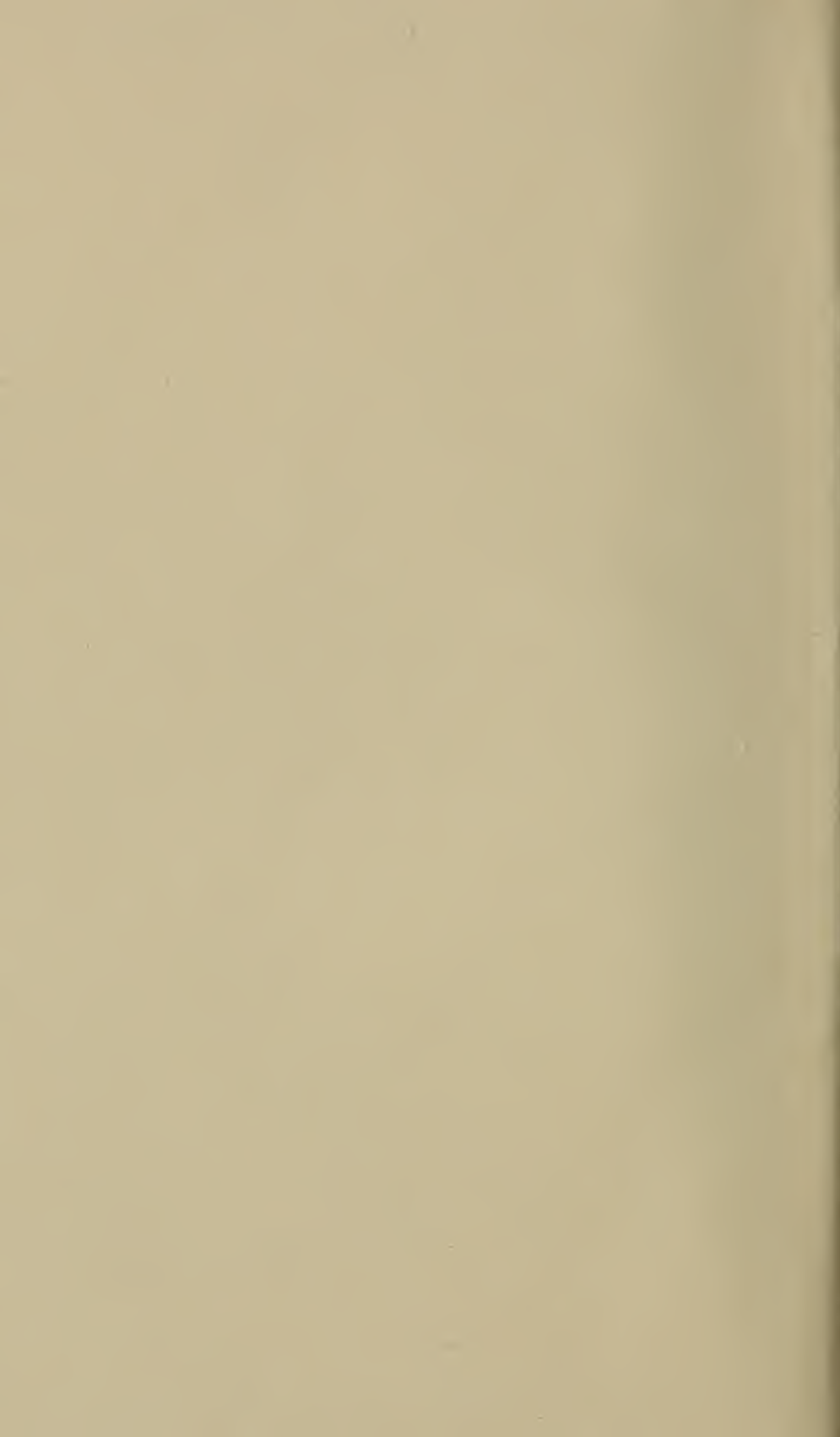
Respectfully,

HARRY CHAPMAN,

President.

N. B.—About a week before you leave for Columbia, write to the COMMITTEE ON MEMBERSHIP OF THE Y. M. C. A., notifying them when you expect to be here. how much you wish to pay for board and what class you expect to enter at the university. Valuable assistance may be rendered by our members to new students in securing good boarding places, entering the university and getting their work arranged in proper order. Our committee will meet you at the depot and you must feel free to call on them for assistance.





UNIVERSITY OF ILLINOIS-URBANA
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